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POSTGRADUATE EDUCATION IN OTOLARYNGOLOGY

CHAIRMAN'S ADDRESS

GORDON F. HARKNESS, M.D.

DAVENPORT, IOWA

As of Feb. 3, 1942 there were about 180,700 physicians in the United States. The approximate subdivision of this number is given in table 1.

With the exception of a small minority the medical profession has advocated individualism in the application of its science. The progress of medical science and education in this country is cited as justification for the continuance of the present basic type of medical practice.

Specialization in different fields has come as a natural consequence and with it greater emphasis on postgraduate education. During the adolescent years of the special fields of practice in medicine there was a great lack of educational facilities. Present day criticism of the former all too superficial courses, many operated without supervision for personal profit, forgets that they were a part of the defects of the general medical educational program prior to present day standards. Yet out of this earlier system there were developed men of outstanding ability. What is often forgotten is that one's education in medicine is never finished. Countless examples can be offered showing that the individual who follows this axiom will eventually prove himself to be superior to those who have had greater opportunities for preliminary preparation but have failed to carry on.

There is an economic side which medical education should recognize that has to do with those delivering medical service. Whether four years' premedical college education is the optimum is a question. Not all educators are agreed that from a cultural or later efficiency standpoint it should be required. The fact that those entering medicine with a college degree show an average higher scholastic rating does not entirely answer the question. The average age of the medical graduate at the present time is 26. With an additional one year's internship required, the question of then entering practice or preparing for a limited field of medical activity confronts him. One year's hospital service is the minimum and certainly two years is much preferable if one is adopting a special field, for basically we are or should remain doctors of medicine. Granting that three years of training in a special field of medicine is desirable, this brings the average age to 31 before entering private practice. In private practice it will take from eight to ten years before the average man will reap an adequate reward for his efforts, and in fifteen to seventeen years he will attain his maximum or peak, which he can expect to retain from ten to twelve years, when a period of decline can be anticipated. In other words, at about the age of 40 he should be having adequate compensation for his labors, by 46 he reaches his peak and by 56 the period of decline can be expected. He has been his own invested capital, and when this period of decline comes there is no chairmanship of a board to which he can retire and be compensated. I mention this only to preface what the commonwealth actually needs in the way of specialized services and how finely we should subdivide the preparation so that such services can be rendered efficiently and economically.

We have had a sister specialized field, ophthalmology. Few of the older men still practicing did not embrace both fields earlier in their careers. After they gravitated to one or the other they were better men for having at one time applied their knowledge to both. There is something to be said against narrowing one's horizon too much. This may be debatable, but there is an economic side that is not to be disputed. There are communities which are entitled to good service but are not large enough to support physicians devoting their attention only to ophthalmology or otolaryngology. Statistical studies are lacking, but the American Board of Otolaryngology some four years ago put out a questionnaire which the secretary, Dr. W. P. Wherry, informs me warrants the conclusions that:

A city to support a good ophthalmologist or otolaryngologist limiting his practice to one of these two specialties should have at least 35,000 to 50,000 population.

A city of 25,000 could support one or two good combined eye, ear, nose and throat men.

Cities of less than 15,000, particularly if located close to large centers, would have difficulty in maintaining more than one good combined specialty.

A glance at our population centers will show the necessity of service to smaller population groups. The division of our population according to the 1930 census is given in table 2.

From figures available there are 51,026 physicians in this country professing to limit their practice to special fields with approximately 20 per cent more giving special attention to these fields. Statistical information from the Bureau of Medical Economics of the American Medical Association reveals that there

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are 1,435 limiting their work to ophthalmology, 1,674 limiting their work to otolaryngology and 4,358 limiting their work to ophthalmology, otology, laryngology and rhinology. Some 20 per cent more give special attention to these fields.

According to the report of the Council on Medical Education and Hospitals revised to September 1941

TABLE 1.—*Distribution of Physicians*

Classification	Number
Not in practice or retired	8,300
Interns, residents or others in hospital service	18,000
Government service (Regular Army, Navy, U. S. P. H. S., Administration and Indian Service)	5,000
Medical Reserve Corps (Army, Navy and National Guard) on active duty	13,000
Employed, insurance companies, teaching, public health, industrial firms, laboratory work, not in private practice	4,400
	48,700
Those in private practice	132,000
	180,700

relative to approved institutions for residencies, length of service, number of residencies and assistant residencies, I have obtained the data presented in table 3. The average annual admittance is rather difficult to state from the report but is estimated as given.

The length of service varies from one to six years (table 4). The one year services are offered in about one third of the institutions, and this same proportion exists in those institutions offering a combined service. The impression gained as one attempts to digest these figures is the lack of correlation of these services to the needs of the country. One year is too short a time for proper preparation for one intending to limit oneself to ophthalmology or otolaryngology; six years would be too long for one to spend preparing for a combination of ophthalmology and otolaryngology. It would seem that most of our outstanding institutions prefer to carry out this postgraduate education independently in their departments of ophthalmology and otolaryngology. One wonders whether greater correlation of effort for those who will not in practice separate the two might

TABLE 2.—*Division of Population*

	No. of Cities
Communities of 1,000,000 and over	5
Communities of 500,000-1,000,000	8
Communities of 250,000- 500,000	24
Communities of 100,000- 250,000	56
Communities of 50,000- 100,000	98
Communities of 25,000- 50,000	185
Communities of 10,000- 25,000	606
Communities of 5,000- 10,000	851
Communities of 2,500- 5,000	1,332
Communities under 1,000- 2,500	13,433

yield more practical results. These remarks are in no sense belittling the most thorough preparation for the man who decides to limit himself to but one of the two specialties but are intended rather to emphasize the practical needs of medical service in the specialties as it is and will continue to be delivered. The smaller communities are entitled to good medical service, including the specialties. The efforts of our best institutions should be lent to further this cause as well as prepare men who choose to limit their activities further in metropolitan centers. As one who has lived his professional life on the firing line of private practice, not in the smaller but also not in metropolitan centers, it has seemed that if the basic special training is too finely divided there will result inability to distribute the products of this training to the best interests of the public, together with fair compensatory rewards to those delivering the service. It is equally important that there should be inculcated in the minds of medical men, for the best interests of the public, the fact that the best application of scientific medicine today endorses not only special fields of practice but special fields within special fields. The most successful relief of many conditions requires constant practice of dexterity and properly trained assistance in professional and hospital personnel. It is no reflection on intellectual capabilities but rather to the credit of the man who recognizes the need of the patient for the specialist within the specialty and, in the interest of better service, refers him to one whose environment gives him the opportunity to deliver it. Smaller communities are entitled to this service, but it cannot be accomplished by too fine a limitation of activities. I can point to communities into which have gone men particularly well trained in one or the other of our related specialties but because of local or economic conditions have then embraced and practiced the sister specialty with practically no preparation: surely an inconsistency of precept. Believing firmly in the benefits of competition, I would even venture the

TABLE 3.—*Average Annual Admittance*

	Ophthalmology	Otolaryngology	Ophthalmology-Otolaryngology
Institutions	51	64	42
Residencies and assistant residencies	162	171	113
Average annual admissions	85	92	43

opinion that, in a community large enough to support one ophthalmologist and one otolaryngologist if they alone occupied the field, the community would not get as good service as if it had two competing men who embraced both fields. The smaller communities are entitled to the services of well trained men, men whose intellectual capabilities are on a par with those whose field of activity may be more limited. These communities should have men who possess the diagnostic ability to advise patients properly even though their opportunities prevent them from rendering every service. To supply this type of trained men should be part of the program of postgraduate education of our best institutions.

The success of the various self-appointed examining boards has demonstrated, by the cooperation of men already successfully established, a desire to establish standards for improvement of service and protection of the public. The basic purpose of these boards is not to establish the ultimate ability of each authenticated candidate. They cannot be responsible for his professional morality. They serve their purpose when they can state that, after careful investigation and after a fair examination, it is their belief that the certified physician is a safe man to practice his particular field of medicine. To subdivide too finely, to look askance at the man who because of environment does not quite conform to what might be expected in a different population center, will hinder rather than advance a program of greatest merit. Speaking as one who has had the

opportunity of observing the marvelous advances of undergraduate and postgraduate medical education for nearly four decades and the recognition of special fields of activity with self-imposed standards of requirement, one can well pay homage to those who have accomplished all this. It has, however, complicated the picture. Better medicine has meant more expensive medical care and with it more economic problems. This potpourri of economics, scientific medicine and population groups means that our long range educational program to supply medical service must be practical for all population groups—that too fine and restricted a subdivision of recognized fields of service may hinder rather than advance the program. We shall be judged by the service that is rendered as a whole and not by the accomplishments of any one individual. Utopian idealism always must defer to practical realism. Medical educators and examining boards must preserve a broad horizon in order to accomplish the greatest good.

TABLE 4.—*Length of Service*

	Number	Length of Service	
Ophthalmology			
Residencies	103	1-6 years	1
Assistant residencies	45	1-4 years	1
Fellowships	14	2-4 years	1
		1-3 years	6
Total	162	1-2 years	4
		4 years	1
Average annual admittance	85	3 years	7
Approved institutions for residencies and fellowships	51	2 years	13
		1 year	17
Otolaryngology			
Residencies	109	1-6 years	1
Assistant residencies	58	1-4 years	2
Fellowships	4	2-4 years	1
		1-3 years	4
Total	171	1-2 years	11
		3 years	7
Average annual admittance	92	2 years	36
Approved institutions for residencies and fellowships	64	1 year	22
Ophthalmology and Otolaryngology			
Residencies	72	1-4 years	1
Assistant residencies	40	1-3 years	7
Fellowships	1	1-2 years	10
		3 years	4
Total	113	2 years	6
		1 year	14
Average annual admittance	43		
Approved institutions for residencies and fellowships	42		

509 Putnam Building.

Recreation a Sovereign Remedy.—England in her urgent haste and out of her harrowing experiences has learned the healing and restoring power of recreation, not only for men in the service and little children terrified by the commotion, but for even the most elderly and prosaic. The treatment of physically ill patients by prescribed recreation is a common sense procedure utilized by many physicians without any scientific authority or guidance. Many a man is told to let up on some of his business activities and take a trip who hasn't the slightest capacity for utilizing such a trip for anything but the enhancement of his misery. Many a man is told to play golf who is not only unfitted for golf but who doesn't like golf and who whacks at the ball and tramps his weary rounds on the golf course in the same spirit that he downs a teaspoonful of elixir of quinine. On the other hand, properly adapted to the individual, there is no question that recreation can be and has been a sovereign remedy.—Menninger, Karl, and Menninger, Jeanetta Lyle: Recreation for Morale, *Bull. Menninger Clin.* **6**:96 (May) 1942.

CONGENITAL FLATFOOT

JOHN G. KUHNS, M.D.
BOSTON

Weakness and other disturbances of the feet are found in more than 50 per cent of all small children.[1] Many of these disturbances disappear spontaneously as the child develops better balance and skill in walking. But a small number, about 0.5 per cent, will show persisting ligamentous relaxation of the feet with displacement of the medial tarsal bones inward and downward on weight bearing. Without adequate treatment these feet, showing extreme relaxation, progress to much functional disturbance in adult life. At birth the deformity of the feet in this group varies in severity from simple ligamentous relaxation to fixation of the foot in calcaneovalgus. Much confusion exists in medical literature about these feet because different writers have described different degrees of this deformity.

The patients with milder deformity often show generalized relaxation of the subcutaneous tissue and of ligamentous structures—the so-called Ehlers-Danlos syndrome.[2] The more severe ones frequently resemble the pes calcaneovalgus congenitus described in the older medical literature.[3] Seen in adolescence, many of these feet show subluxation of various tarsal bones and increasing deformities of the bones of the feet. From a study of feet of children during the past ten years, with prolonged and discouraging attempts at correction, we feel that this group, with its many variations, can best be called congenital flatfoot. At birth all show unusual ligamentous relaxation.[4] In all of them the midtarsus is displaced inward and downward on weight bearing, with depression of the longitudinal arch. Treatment is tedious and improvement is slow. All progress to serious disability if the condition is not treated.

In infancy and early childhood congenital flatfoot can be diagnosed primarily by the extreme ligamentous relaxation about the foot. The dorsum of the foot can frequently be brought to the anterior surface of the tibia[5] (fig. 1). Passive, painless subluxation at the tarsal joints often occurs. In the more severe deformity the foot may be constantly in eversion and dorsiflexion. Usually it can be brought into inversion passively without difficulty. Examination of the depression of the arch on weight bearing is usually of no assistance before the age of 2 years.[6] When the child begins to stand extreme valgus of the foot is found, with inward and downward displacement of the astragalus and scaphoid (figs. 2 and 3). Walking by these children is often delayed. There is defective balance and great awkwardness, and the shoes become misshapen rapidly.

Roentgenograms are of little assistance in infancy, since only three or four osseous centers are visible.

Read before the Section on Orthopedic Surgery at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1942.

1. Roche, H. R.: Weak, Pronated and Flat Feet in Childhood, Arch. Pediat. **50**: 380, 1933.

2. Barber, H. S.; Fiddes, J., and Bevins, T. H. C.: Ehlers-Danlos Syndrome, Brit. J. Dermat. **53**: 97, 1941.

3. Guntz, E.: Die pathologische Anatomie des angeborenen Plattfusses, Ztschr. f. Orthop. **69**: 219, 1939.

4. Spiro, E.: Ueber den angeborenen Plattfuss, Ztschr. f. Orthop. **62**: 170, 1934.

5. Boorstein, S. W.: Congenital Flatfoot; Its Importance for the General Practitioner, Arch. Pediat. **57**: 377, 1940.

6. Bloxsom, A.: A Study of Feet of Children, Am. J. Dis. Child. **59**: 45, 1940.

Later a number of changes are seen. The development of the osseous centers of the tarsal bones and the appearance of the epiphyses are often delayed[7] (fig. 4). After the age of 6 years deformities in the tarsal bones and subluxations are found in a large number of congenitally flat feet. The astragalar neck is frequently

Fig. 1.—Congenital flatfoot; excessive relaxation of the foot, particularly the achilles tendon.

elongated and twisted externally in relation to the body. The articular surface between the astragalus and the os calcis in weight bearing becomes parallel to the ground, and this may lead to permanent deformity at this joint. There may be anterior displacement of the external malleolus. The scaphoid bone is frequently displaced downward as much as ½ inch from its normal articulation with the astragalus[8] (fig. 5). In adolescence the scaphoid may become wedge shaped with its widest portion on the inner side. The internal cuneiform may become elongated and rounded at its mesial side. Some of these osseous changes in the tarsal bones may be congenital but anatomic studies on fetuses have failed to demonstrate them. It is my opinion that they are chiefly developmental, the result of faulty weight bearing on an extremely relaxed foot.

Fig. 2.—*A*, congenital flatfoot with downward and inward displacement; *B*, congenital flatfoot corrected by insoles and a raise on the heel.

In adolescence and in adult life congenital flatfoot usually continues to show extreme ligamentous relaxation. Rarely is there spasticity in the peroneal muscles so commonly found in other types of flatfoot. The severity of the deformity is usually greater also in congenital flatfoot, with excessive movement at the tarsometatarsal joint.[9] Congenital flatfoot responds very slowly to treatment. Arthritis and changes in the shape of the tarsal bones are often found in the second decade. The symptoms will depend on the severity of the strain. Lasting relief of symptoms is rarely observed in congenital flatfoot when treatment is not begun during the first decade of life. Adult patients can usually be made comfortable temporarily with apparatus, but occupations that require prolonged standing and walking cannot be followed.[10]

The pathogenesis and the background on which congenital flatfoot develops are not clearly understood. We have no acceptable explanation for the great differences in severity found in children. Heredity seems to play a part in its causation. In every instance in which a careful inquiry was made a history of a similar disability was found in the family of one or both ancestors. Sufficient data are not yet available, but what evidence there is suggests that it behaves like a recessive trait.[11] It has been suggested that prenatal or early

Fig. 3.—Posterior view of the same feet as in figure 2. There is valgus of the os calcis.

rickets or some other nutritional disturbance might be the cause of the muscular and ligamentous relaxation,[12] but no evidence of such nutritional disturbances has yet been forthcoming. Böhm[13] has postulated a failure of the foot to develop from the intrauterine position of valgus of the ankle joint and varus of the subastragalar joint. The position in utero with accompanying torsion of the tibias is no longer considered a valid explanation.[14]

Because the deformity of the foot is progressive without treatment, and because disability becomes severe in adult life, treatment should be started as soon as the condition is recognized. This treatment should be continued without interruption during early childhood until the foot is able to assume a normal position on weight bearing. Half hearted measures are entirely

7. Straus, W. L.: Growth of the Human Foot and Its Evolutionary Significance, Contrib. Embryol. **19**: 93, 1927.
8. Kaplan, M., and Kaplan, T.: Flatfoot, Radiology **25**: 485, 1935.
9. Pusch, G.: Ueber Entstehung und Verhütung des Plattfusses in Kindesalter, Ztschr. f. Orthop. **66**: 241, 1937.
10. Cathcart, E. P.: The Feet of the Industrial Worker, Lancet **2**: 1480, 1938.
11. Siegmond, E.: Ueber eine besondere Form des Plattfusses, Deutsche Ztschr. f. Chir. **246**: 42, 1930.
12. Brinkmann, E.: Entstehung und Behandlung des Fussinsuffizienz im Kindes- und Erwachsenenalter, Arch. f. klin. Chir. **190**: 390, 1939.
13. Böhm, M.: The Development of Juvenile Pes Valgus, J. Bone & Joint Surg. **12**: 333 (April) 1930.
14. Schumm, H. C.: Juvenile Flatfoot, Am. J. Dis. Child. **38**: 1273, 1929.

ineffective. Not all patients will require treatment for the same length of time. The less severe disabilities will respond to treatment more readily and will require less elaborate apparatus in the after-care. Treatment must be both local (for the feet) and general (for the child as a whole). Adequate nutrition and sufficient rest and exercise are prerequisites to local treatment.

In infancy, when the foot shows extreme relaxation or a tendency to lie in calcaneovalgus, the most effective treatment is some form of support which holds the foot in inversion and plantar flexion at all times, except when the foot is bathed. Braces may be used, but the simplest apparatus is a light plaster cast, which may be coated with a waterproofing compound (fig. 6). This cast is cut into an upper and a lower half in order that it may be removed when necessary. The use of this cast leads to a gradual adaptive shortening of the relaxed muscles, especially those which pull the foot into inversion and plantar flexion. The time when the cast is to be discontinued is determined by the return of the normal limitation of motion in dorsiflexion and eversion and by the correction of the well defined

Fig. 4.—Congenital flatfoot of a child of 5 years. There is delayed osseous development. The osseous center for the scaphoid bone is just visible. There is no evidence of the third cuneiform.

ligamentous relaxation. Daily gentle manipulation of the feet by the nurse into inversion and plantar flexion is sometimes helpful.

When the child begins to stand, support which the child can use in walking should be provided. It is our aim to hold these congenital flat feet in an overcorrected position both when the child is in bed and when he is standing until he is able to stand with little displacement of the midtarsus and with little depression of the longitudinal arch. This overcorrected position is one of elevation of the longitudinal arch with the hind part of the foot, especially the os calcis,[15] held in varus. A short caliper brace with attached foot plate is indicated in the severe ones. Usually, however, a felt or rubber pad under the entire longitudinal arch, high enough to correct any inward and downward displacement of the astragalus and scaphoid, is adequate if combined with a lift on the inner side of the heel to correct the valgus of the os calcis. This pad is most conveniently put into an innersole, so that it may be changed from one shoe to another. Foot plates are equally effective but are usually not as comfortable for small children (fig. 7).

15. Roberts, P. W.: Prevention and Treatment of Weakfoot in Children, J. A. M. A. 75:237 (July 24) 1920.

In addition to the pad in the shoe a slight raise on the inner side of the heel of the shoe is also given to tilt the os calcis into slight inversion. I have found it effective to raise the front inner corner of the heel and as far forward as the internal cuneiform (fig. 3 *B*). The lift is usually $\frac{1}{8}$ to $\frac{3}{16}$ inch for children under

Fig. 5.—Anteroposterior and lateral views of congenital flatfoot of a child of 12 years. The scaphoid is depressed and the longitudinal arch of the foot is flattened. In the anteroposterior view there is medial and posterior projection of the astragalus.

4 years of age and $\frac{1}{4}$ to $\frac{1}{2}$ inch for children beyond this age. We do not raise the sole of the shoe under the ball of the foot. When the child first walks the plaster casts that hold the feet in inversion and plantar flexion are worn only at night. Sufficient shortening may have occurred in the relaxed supporting muscles and ligaments to permit the removal of the casts entirely by this time. But usually they are worn for at least two years. When the foot cannot be brought into more

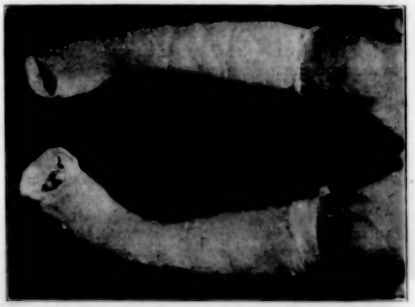

Fig. 6.—Plaster casts used in the treatment of congenital flatfoot. These hold the feet in inversion and plantar flexion.

than 30 degrees of eversion or more than 40 degrees of dorsiflexion, the wearing of the plaster casts at night is no longer required.

When the child is able to carry out simple commands, active exercises for the feet are added to the treatment. These are given in order to secure a habitual

position of standing and walking in which the weight is carried on the outer side of the foot. Walking along a line with the foot in slight inversion and standing with the feet parallel with the knee cap rolled outward are probably the simplest of these exercises.[16] An attempt should be made to correct the posture of the child at the same time, since weakness of the glutei usually associated with faulty posture adds to the disability of the feet and hinders proper use of the supporting musculature.[17] The feet are an inseparable part of the body and the entire child must be considered in the alinement and weight carriage.

With the persistence in such treatment, correction of severe congenital flatfoot is possible in the first decade. Exercises and supports in the shoes are usually necessary, however, for the entire growing period. When the child can maintain the foot in a good weight bearing position with little downward displacement of the longitudinal arch and no eversion of the heel, support for the foot may be discontinued. By these measures at the present time we are able to correct about 50 per cent of congenitally flat feet. These corrected feet have no disability and show no deformity. It is our belief

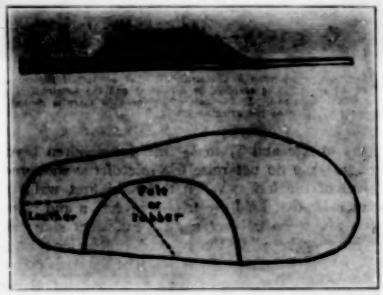

Fig. 7.—Diagram of insole. A lift of leather on the heel to tilt the os calcis into varus, with a support under the longitudinal arch to prevent the depression of the longitudinal arch. These corrections are attached to an insole worn in the shoe.

that few congenitally flat feet would require any further treatment if these or similar measures were carried out for a prolonged period of time. Parents and physicians still take too complacent an attitude in regard to this serious disability.

No operative procedures for the feet should be undertaken, even when there is serious disability, before the age of 12 years. Most symptoms can be relieved, even in adults, with proper shoes and with supports under the longitudinal arch. But after 12, and preferably when full bony development has occurred, in the presence of serious disability, operative correction is indicated. There are a number of operative procedures available, depending on the severity of the condition. Tenodeses or transplantations of the tendons alone have not been effective in our experience.[18] For the less extensive relaxations with little osseous deformity, arthrodesis of the astragaloscaphoid joint[19] or scaphocuneiform joint may be sufficient. These procedures prevent displacement of the midtarsus downward and inward and disturb the flexibility of the foot very little. If a more extensive procedure is required, further arthrodeses may be performed, particularly along the medial side of the foot. Operations which secure correction and obtain stability and still do not sacrifice all movement in the posterior tarsal bones are preferable, such as those described by White[20] and Miller.[21] If there is arthritis or much distortion of the subastragalar joint, the joint should be fused, but usually it is better not to stiffen this joint. The operation should correct deformity completely and permit weight bearing without strain. After operation the foot is held in plaster and later by foot supports in slight inversion and with a little elevation of the longitudinal arch until the operation on the tarsus is solidly healed. During this time exercises are given to develop proper coordination in the supporting muscles of the foot.

16. Bettman, R.: The Treatment of Flatfoot by Means of Exercise, J. Bone & Joint Surg. **19**: 281, 1937.
17. Wiles, P.: Flat Feet, Lancet **2**: 1089, 1934.
18. Morton, D. J.: Mechanism of the Normal Foot and of Flatfoot, J. Bone & Joint Surg. **6**: 368, 1924.
19. Ogilvy, C.: An Operation for the Permanent Correction of Weak Feet in Children, J. Orthop. Surg. **1**: 343 (June) 1919.

CONCLUSIONS

1. Congenital flatfoot is a relatively common disability, appearing in varying severity in about 0.5 per cent of all small children.

2. It is recognized in infancy by the extreme ligamentous relaxation about the foot and by the tendency of the foot to go into calcaneovalgus.

3. With growth, serious deformity and disability appear. Changes are found in the posterior tarsal bones, particularly the astragalus and scaphoid.

4. The cause is not clear but available data suggest that it is inherited, behaving like a recessive trait.

5. Treatment should be started in early childhood. The foot should be held while at rest and in weight bearing in inversion and with slight elevation of the longitudinal arch.

6. In cases of congenital flatfoot which are not corrected by this treatment, relief of symptoms can often be secured by proper shoes and by supports under the longitudinal arch and the inner side of the heel. For severe disability seen in adolescence or adult life, surgical procedures which will hold the foot in a good weight bearing position are usually required.

372 Marlborough Street.

ABSTRACT OF DISCUSSION

Dr. W. Lapidus, New York: I agree with Dr. Kuhns when he looks on the idiopathic flat foot as a congenital hereditary malformation. It has been my increasing conviction that the flat foot must be considered as an arrest of ontogenetic development of the foot. This point of view is borne out by embryology, evolution and the comparative anatomy of the foot. Man is the only primate possessing a longitudinal arch. The foot of the early embryo is flat and does not begin to show any evidence of longitudinal arching before the end of the third month. From this time on the longitudinal arch gradually grows in its height, and its development continues long after birth and is not completed until adulthood. No plastic surgeon would attempt to reshape the nose of an 8 or 10 year old child, since at his age the facial features have not yet reached their permanent configuration. The same is true about the shape of the foot, and yet not infrequently reconstructive operations

20. White, J. W.: Congenital Flatfoot: New Surgical Approach, J. Bone & Joint Surg. **27**: 547, 1940.
21. Miller, O. L.: Plastic Flatfoot Operation, J. Bone & Joint Surg. **9**: 84, 1927.

for flat foot are performed in young children. The congenital flat foot should be looked on as a foot which became arrested in the earlier stages of ontogenetic development and failed to grow as old as the individual himself. The hypermobility of the flat foot in an adult due to ligamentous laxity corresponds to similar hypermobility of the foot in a young child and in an adult ape. The generally accepted possibility of the development of an idiopathic flat foot from an originally normal one is doubtful. The development of a perfectly normal arch toward adulthood from a decidedly flat foot in childhood has been observed by me in several cases. Immobilization in plaster of paris and braces should be reserved for cases of extreme deformities, which fortunately are rare. The rigidity of the foot associated with peroneal spasm and osteoarthritic changes is a late secondary condition superimposed on the original deformity. Operative treatment of common flat foot, especially talonavicular fusion, should be discouraged. The results of twenty-seven operations with variable technics performed on twenty-four idiopathic flat feet between 1930-1935 and reported by me before the New York Academy of Medicine about six years ago were rather disappointing. On the other hand, several children in the same series with pronounced deformity in whom no consent for operation was obtained developed toward adulthood practically normal looking and much more serviceable feet than did those in whom operations had been performed. The number of poor postoperative results increased with the number of years elapsing since operation was performed. Therefore for the past six years I have not operated in a single case of idiopathic flat foot.

DR. GUY A. CALDWELL, New Orleans: Dr. Kuhns has adequately described this group of cases. I have employed the plan of treatment practically as Dr. Kuhns has outlined it. Treatment of congenital flat foot during infancy is certainly beneficial in many cases and I have observed that in growing children conservative treatment is not always satisfactory. I have noted that with indifferent treatment some children have improved whereas others who followed most of the same measures prescribed by Dr. Kuhns failed to progress satisfactorily. I have been fatalistic about this condition, and I must confess that it has seemed to me that some literally outgrow it while others do not. Those who do not should be operated on, because their disability in later life is real. I believe that the age at which Dr. Kuhns has indicated operative treatment is correct. I have tried all the procedures described by Dr. Kuhns and I usually institute one of them. The Lowman operation for transplanting the anterior tibial tendon has given good results in a number of cases, and in a few the results have been poor. Operations which involve some change in the contour of the tarsal bones with fusion of the astragaloscaphoid and other joints, such as Miller and White have described, have been followed by good results in some cases and improvement in others, but results have not been uniformly ideal. I wonder if the indifferent results from these various procedures are caused by failure to correct the valgus position of the heel. No operation which consists of less than subastragalar arthrodesis will change the position of the heel materially. Unless this can be done, the mechanical effects of the valgus heel cannot be entirely overcome. However, subastragalar arthrodesis certainly is not the ideal procedure for this condition, although when arthritic changes have set in it becomes the lesser of two evils.

DR. JOHN G. KUHNS, Boston: I agree with most of the things that have been said. My experience has not been quite as happy as that of Dr. Lapidus, but I have found that I have always been happier if I overtreated these feet than if I undertreated them. I have seen no spontaneous improvements. Probably we are speaking of a little different type of feet, because I consider the condition congenital flat foot only if there is extreme relaxation, particularly on the inner side of the foot. I agree with Dr. Caldwell that when we are faced with operative procedures we should do the least possible thing that will bring the foot and hold it in a good weight bearing position.

BISMARSEN (BISMUTH ARSPHENAMINE SULFONATE) FOR TREATMENT OF SYPHILIS

A REVIEW OF FOURTEEN YEARS' EXPERIENCE

HERMAN BEERMAN, M.D.
BERTRAM SHAFFER, M.D.
PHILADELPHIA
AND
CLARENCE S. LIVINGOOD, M.D.
INDIANTOWN GAP, PA.

Bismarsen (bismuth arsphenamine sulfonate), an arsphenamine-bismuth compound synthesized by Dr. G. W. Raiziss [1] in 1924, has been subjected to clinical investigation in the department of dermatology and syphilology of the University of Pennsylvania School of Medicine since 1925. It was first used in the treatment of syphilis by Stokes and Chambers,[2] who in 1927 reported on two years of observation of its effects. In 1931 Stokes, Miller and Beerman [3] reported a summary of three more years' experience with the use of the drug in clinical practice, the results of a reexamination of 94 of the original 204 patients and a summary of the literature up to that date. This study revealed that bismarsen is a relatively nontoxic and easily administered drug for the treatment of patients with syphilis. The incidence of local reactions was low (2 per cent of injections), and systemic reactions occurred after only 0.5 per cent of the injections, or in 11 per cent of the patients. The systemic reactions included nitritoid crises, mild gastrointestinal reactions and cutaneous reactions. The first case of aleukemia hemorrhagica from this drug was noted (1 case for 11,000 injections). Three cases of jaundice were collected from the literature. There were no cerebral reactions. The drug was found to be a valuable substitute for other arsphenamines in the treatment of many reactive patients. It was found to have an apparently good effect in early syphilis, in spite of slower healing and spirillicidal action; it had a good effect on reversal of the serologic reaction of the blood in early syphilis and apparently prevented abnormalities in the cerebrospinal fluid. For early syphilis the incidence of relapse of all forms was only 12 per cent. There was a suggestion that cardiovascular syphilis could progress under cover of treatment with bismarsen in early syphilis, as with other drugs and systems. Continuous treatment was found to be superior to intermittent treatment. The drug reduced about half of resistant positive serologic reactions of the blood to negative in various phases of the disease. Definite tonic effects were secured by treatment with it. In cardiovascular syphilis the drug yielded a good final result in 13 of 22 cases. Also when used alone it afforded patients with cardiovascular syphilis symptomatic relief equal to that secured when it was used in addition to iodide

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From the Department of Dermatology and Syphilology, University of Pennsylvania School of Medicine, and the Institute for the Control of Syphilis, John H. Stokes, M.D., director.

1. Raiziss, George W., and Severac, Marie: Therapeutic Efficiency of Bismarsen in Experimental Rabbit Syphilis, Arch. Dermat. & Syph. **28**: 389 (Sept.) 1933.
2. Stokes, J. H., and Chambers, Stanley O.: Bismuth Arsphenamine Sulfonate, J. A. M. A. **89**: 1500 (Oct. 29) 1927.
3. Stokes, J. H.; Miller, T. H., and Beerman, Herman: An Appraisal of the Newest Arsphenamine Synthetic Bismarsen, in the Treatment for Syphilis, Arch. Dermat. & Syph. **23**: 624 (April) 1931.

and mercury. In prenatal syphilis the action of the drug, while not fully appraised, seemed somewhat disappointing. Its slowness of action made it second choice for the treatment of acute interstitial keratitis. Its tonic effects were valuable. As a rule it had little good effect when used alone in the treatment of neurosyphilis, although certain types of neurosyphilis, particularly tabes dorsalis with lightning pains, seemed to be greatly benefited. Since this study was made, numerous reports have appeared on the use of bismarsen in various phases of syphilis.[4] In addition, recent studies emphasizing certain reaction tendencies [5] and the use of this drug for conditions other than syphilis have been reported.[6]

We have undertaken the present study in order to reevaluate our experience with bismarsen as used over a period of fourteen years in the department of dermatology and syphilology of the Hospital of the University of Pennsylvania.

MATERIAL

In this study 823 patients received a total of 18,286 injections. They were fairly evenly divided among white and Negro and male and female patients (432 white, 391 Negro, 409 male and 414 female). Of them, 299 had latent and Wassermann-fast syphilis, 151 had prenatal syphilis, 57 had late cutaneous and osseous syphilis, 117 had early syphilis, 101 had cardiovascular syphilis and 98 had syphilis of the central nervous system. Their ages ranged from 1 to 74 years. The range of ages on admission was that usually found for patients with the various phases of syphilis studied. Bismarsen was administered whenever possible twice a week and in uninterrupted courses of 60 injections or more, with the treatment tapered off with injections of a bismuth preparation. Many of the patients were not treated exclusively with bismarsen. This is especially true of the patients to whom bismarsen was given because of some reaction to another arsenical. Furthermore, many of the patients with newly acquired early syphilis have been subjected to other forms of treatment under investigation since 1932. As many patients as possible were subjected to complete reexamination with special reference to the cardiovascular and the central nervous system, serologic tests of the blood for syphilis and examination of the cerebrospinal fluid. In addition, special consultation was had with the cardiologist, the neurologist and the ophthalmologist whenever possible, and special laboratory studies and roentgenologic studies were made when indicated.[7]

LOCAL AND GENERAL REACTIONS TO BISMARSEN

Whereas the 1931 study [3] showed that 2 per cent of the injections had produced local reactions sufficient to be notable (percentage of patients affected, 35.5), in this evaluation, 0.85 per cent of the injections yielded local reactions (percentage of patients affected, 18.8). As was previously noted, local reactions were considerably fewer in the patients with prenatal syphilis, since only 8 per cent of these patients had such reactions. This experience differs from that of Yampolsky,[8] who stated the belief that bismarsen causes considerable pain in children. General reactions were for the most part mild; 135 such reactions occurred among the 823 patients. They consisted of gastrointestinal reactions, 58 cases; chills and fever, 28 cases; nitritoid crises, 19 cases; pruritus with or without dermatitis, 11 cases; arsphenamine dermatitis, 5 cases; hemorrhagic purpura, 5 cases; blue line of the gums, 2 cases; urticaria, 2 cases; nondescript eruption, 2 cases; headache, 1 case; an eruption like pityriasis rosea, 1 case, and abdominal cramps, 1 case. While this incidence of general reactions is higher than was previously reported by this group (16.2 per cent as compared with 11 per cent of patients), emphasis must be placed on the fact that in recent years the tendency has been to use bismarsen more and more in the treatment of patients who have had reactions to various other arsenicals, of which special mention will be made hereafter. Our figure (0.75 per cent) compares favorably with that of Thurman and Tolman,[9] who, in the department of dermatology and syphilology of the Boston Dispensary, found 1.6 per cent of injections producing reactions in patients who for the most part were being treated with bismarsen because they were unable to tolerate other arsenicals injected intravenously.

Recent interest, as expressed by a number of reports on hemorrhagic reactions to bismarsen, deserves special consideration. Stokes, Miller and Beerman reported the first case of hemorrhagic purpura. Niles [10] (1934) reported this reaction in a man who, although treated with bismarsen, had had a great deal of previous antisyphilitic therapy, to all of which he reacted in some degree and who twenty-two months previously had had the same type of reaction after the use of sulfarsphenamine. Grund's [11] patient, too, had previously had purpura, from neoarsphenamine. Wyatt [12] reported in 1939 a case of peripheral neuritis from neoarsphenamine in which hemorrhagic purpura subsequently developed from bismarsen. Falconer and Epstein,[13] who reported 5 cases of thrombopenia and purpura, in 2 of which the reaction followed intravenous injections of neoarsphenamine and in 3 of which it occurred after intramuscular injections of bismarsen, concluded from their observations and studies made after test doses of the arsphenamines to which these patients were sensitive that

> . . . varying degrees of shock occurred, suggesting that the reaction was an allergic phenomenon rather than due to the toxic effects of oxidation or to a changed chemical form

4. Harrison, L. W.: The Modern Treatment of Syphilis, Practitioner **136**: 193 (Feb.) 1931. Hadden, Samuel B., and Wilson, George: Bismuth Arsphenamine Sulfonate (Bismarsen) in the Treatment of Tabes Dorsalis, Am. J. Syph. **15**: 316 (July) 1931. O'Leary, P. A.: Therapeutic Problems of Syphilis, Proc. Internat. Assemb., Inter-State Postgrad. M. A. North America, October 19-23, 1931, p. 273. Garner, Vaughn C., and Stokes, John H.: The Treatment of Early or Acute Syphilis, M. J. & Rec. **134**: 569 (Oct. 21) 1931. Grund, J. L.: Bismarsen Efficacy in Wassermann Fast Syphilis, Arch. Dermat. & Syph. **26**: 1074 (Dec.) 1932. Smith, C. Morton: The Treatment of Syphilitic Cardiovascular Disease, New England J. Med. **208**: 185 (Jan. 26) 1933. Beckman, Harry: The Present Status of Bismarsen in the Treatment Syphilis, ibid. **208**: 467 (March 2) 1933. Walther, H. W. E.: Therapy in Primary Syphilis with Special Reference to Bismuth Arsphenamine Sulfonate (Bismarsen), New Orleans M. & S. J. **86**: 150 (Sept.) 1933. Stokes, J. H., and Beerman, Herman: The Trivalent Arsenicals in Syphilis: Some Recent Advances, Comparisons and Evaluations, Am. J. M. Sc. **201**: 611 (April) 1941. Chambers and Koetter.[16] Marks.[20] Reilly.[29]

5. Schoch, A. G.: Systemic Reaction to Bismarsen, Am. J. Syph. **16**: 319 (July) 1932. Thurman and Tolman.[9] Niles.[10] Grund.[11] Swartz, Tolman and Levine.[24] Wyatt.[12] Falconer and Epstein.[13]

6. Conrad, A. H.; Conrad, A. H., Jr.; Mapother, P., and Weiss, R. S.: Lichen Planus Treated with Bismuth Arsphenamine Sulfonate (Bismarsen), South. M. J. **33**: 721 (July) 1940. Weiss, R. S.; Conrad, A. H.; Conrad, A. H., Jr., and Pfaff, R. O.: XCVI. Treatment of Lupus Erythematosus with Bismarsen, Arch. Dermat. & Syph. **44**: 1009 (Dec.) 1941.

7. Dr. Charles C. Wolferth, cardiologist, Dr. W. B. Cadwalader, neurologist, Dr. F. H. Adler, ophthalmologist, and Dr. E. P. Pendergrass, roentgenologist, and their respective staffs gave generous cooperation in this study.

8. Yampolsky, J.: A Comparative Review of the Use of Antiluetic Drugs in the Treatment of Congenital Syphilis in Children, South. M. J. **31**: 406 (April) 1938.

9. Thurman, F. M., and Tolman, M. M.: Acquired Hypersensitivity to Arsenobenzol Radical of Bismarsen, New England J. Med. **209**: 540 (Sept. 14) 1933.

10. Niles, H. D.: Hemorrhagic Purpura Following Bismarsen, Am. J. Syph. & Neurol. **18**: 300 (July) 1934.

11. Grund, J. L.: Purpura Hemorrhagica with Profuse Bleeding from Mucous Membrane Following Treatment of Syphilis with Bismarsen, New England J. Med. **211**: 443 (Sept. 6) 1934.

12. Wyatt, W.: Purpura Hemorrhagica Due to Bismuth Arsphenamine Sulfonate, M. Rec. **149**: 349-350 (May 17) 1939.

13. Falconer, E. H., and Epstein, N. N.: Purpura Hemorrhagica Following Neoarsphenamine and Bismarsen Therapy, Arch. Int. Med. **63**: 1158 (June) 1940.

of the drug injected. The prompt loss of circulatory tone accompanying the reaction appears to be a vasomotor effect, with loss of capillary tonus, dilatation of the capillary bed and a rapid loss of platelets from the general circulation. It is difficult to believe that such enormous numbers of platelets could be destroyed within fifteen minutes after the drug is injected. The fact that a great number of platelets can be returned promptly into the general circulation by injection of 1 cc. of epinephrine hydrochloride (1:1,000 solution), and the rapid rise of the platelet count within twenty-four to forty-eight hours after the reaction, are evidence against the assumption of widespread destruction of the platelets.

The blood cells other than the platelets showed little if any change during these experiments. There appeared to be a tendency to an increase of the polymorphonuclear cells following a reaction, particularly a severe reaction. This may well be a phenomenon similar to the leukocytosis associated with protein shock.

We have observed no deaths due to bismarsen, although Swartz, Tolman and Levine [14] in 1936 reported a fatal case of fat embolism following the use of this preparation. They attributed the reaction to the arsphenamine radical common to bismarsen and the other arsenical compounds.

Stokes, Miller and Beerman found bismarsen a useful substitute in the treatment of reacting patients. Further experience has confirmed this earlier view, but we are not in favor of extensive use of another arsenical in place of one which has produced a serious arsphenamine reaction. In the case of mild reactions, our more extended experience has indicated that in about two thirds of cases of gastrointestinal reactions to arsphenamine, neoarsphenamine and trisodium arsphenamine sulfonate, bismarsen may be used without fear of recurrence of the reaction. As to patients with nitritoid reactions and chills and fever from the various arsenicals, about half may receive bismarsen therapy with no recurrence of the reaction. Bismarsen may be tried cautiously in the treatment of patients who have recovered from jaundice induced by other arsenicals. Although we found 6 cases of pruritus and 1 in which the patient had recovered from arsphenamine dermatitis due to other arsenicals but tolerated bismarsen well, we do not feel that except under expert guidance further arsenical therapy should be tried in such cases.

BISMARSEN IN PRIMARY AND SECONDARY SYPHILIS

In the earlier reports, as well as in more recent reports, it has been indicated that bismarsen is an effective drug in the management of early syphilis. It has the drawback, however, of being somewhat slower in the healing effect and spirillicidal action which are demanded of a drug for present day public health qualifications. This apparent defect is overcome by a consideration of the end results of bismarsen therapy. Our present results in regard to healing effect, spirillicidal effect and symptomatic response are essentially the same as those reported by Stokes, Miller and Beerman because most of the patients with newly acquired early syphilis recently treated in our clinic have been given other drugs which were under investigation, and patients who had reacted to other drugs were then given bismarsen.

Healing Effect and Spirillicidal Action.—The healing of primary lesions took place between the fifth and the thirteenth injection, and secondary lesions healed after an average of about 4 injections, or in seventeen days. The spirillicidal action occurred within an average of seventy-four and one-half hours.

Herxheimer Reaction.—Four patients were observed with the Herxheimer reaction.

Effect on the Serologic Reactions of the Blood and on the Cerebrospinal Fluid.—No significant new data were obtained with regard to reversal of the serologic reaction of the blood in early syphilis. In the few additional fresh cases of early syphilis in which the patient was given bismarsen and treated with it exclusively, this reversal occurred after an average of 14.6 injections in ninety-eight and seven-tenths days. Serologic reversals in early syphilis were usually permanent. Of 71 patients with early syphilis observed for periods ranging from six months to fourteen years, serologic relapse occurred alone in 4 paticnts and in conjunction with an infectious mucocutaneous relapse in 4 additional patients (11.3 per cent, as compared with 14 per cent of 258 patients with serologic relapse under treatment for more than six months in the Cooperative Clinical Group study).[15]

In 48 patients one or more examinations of the cerebrospinal fluid were made. In 6 the fluid was found to be abnormal. Of these 6, 2 had previously been reported on by Stokes, Miller and Beerman. One of these was reexamined in 1939. The serologic reaction of the blood was negative, but no repeat examination of the cerebrospinal fluid could be made. The other patient could not be found for reexamination. Of the 4 new patients with abnormal spinal fluid the abnormality in 1 can hardly be attributed to bismarsen therapy. He is one of the two brothers involved in a case of transfusion syphilis reported by Livingood and Beerman.[16] A boy of 10, treated adequately with bismarsen, whose first cerebrospinal fluid test, after treatment, gave negative results, had a positive reaction to a cerebrospinal fluid test when reexamined several years later. His brother's syphilis, treated with neoarsphenamine and bismuth, had a similar outcome. The patient and his brother were considered to have either a constitutional factor or a neurotropic strain of Spirochaeta pallida to account for this unusual course. Another of the 4 patients with positive results of cerebrospinal fluid examinations was a man who was treated first with trisodium arsphenamine sulfonate but because of reactions to this drug was then given bismarsen somewhat irregularly. His cerebrospinal fluid was type 2, but after 41 additional injections of bismarsen one and one-half years later, reexamination of the cerebrospinal fluid gave negative results. The third patient had received only 15 injections of bismarsen after 17 injections of neoarsphenamine and 12 of bismuth compounds. When his cerebrospinal fluid was reexamined three years later (after a total of 15 injections of bismarsen, 17 of neoarsphenamine, 11 of tryparsamide and 64 of a bismuth compound) its reaction was completely negative. The fourth patient had type 3 cerebrospinal fluid after 41 injections of bismarsen, but no recent study of the fluid has been made.

In the follow-up study of all the patients with early syphilis, 48 patients had one or more examinations of the cerebrospinal fluid during the total period of their observation, and only the 6 mentioned showed any degree of abnormality. This experience suggests that

14. Swartz, J. H.; Tolman, M. M., and Levine, Harold: Fatality Following Bismarsen Therapy, Arch. Dermat. & Syph. **33**:874 (May) 1936.

15. Clark, Taliaferro; Parran, Thomas, Jr.; Cole, H. N.; Moore, J. E.; O'Leary, P. A.; Stokes, J. H., and Wile, U. J.: Cooperative Clinical Studies in the Treatment of Syphilis, Ven. Dis. Inform. **13**:135 (April), 165 (May), 207 (June), 253 (July) 1932.

16. Livingood, C. S., and Beerman, H.: Syphilis in Brothers, Am. J. Syph., Gonor. & Ven. Dis. **25**:67 (Jan.) 1941.

bismarsen has a good sustained record of preventing neurosyphilis in patients with early syphilis if treatment is adequate.

Relapse.—Eleven patients with early syphilis showed one or more forms of relapse: 5 had clinical relapse, 8 had serologic relapse (4 of these also had clinical relapse) and 2 had neurorecurrence (1 of these also had serologic relapse). The percentage of all forms of relapse in patients with early syphilis after treatment exclusively or preponderantly with bismarsen and after observation for six months or more is 13.4 (82 cases). This figure compares favorably with the 12 per cent found in the Stokes, Miller and Beerman study of 1931. If only clinical relapse of all types irrespective of the duration of observation is considered, the figure is 11.3 per cent. The Cooperative Clinical Group [16] found the total incidence of relapse in their patients to be 10.1 per cent. If only the patients treated for six months or longer were considered, the figure was 19.7 per cent.

Reexamination.—Of all patients with early syphilis treated with bismarsen, 39 were reexamined one or more times. Twelve were observed for one to five years, 19 from five to ten years and 18 from ten to fourteen or more years after infection was detected. Of these 40, only 3 showed any type of progression. In 2 cardiovascular syphilis developed, in 1 after 40 and in the other after 10 injections of bismarsen, and 1 had neurorecurrence. Two patients were dead; one had committed suicide and the cause of death of the other was unknown. This relatively low incidence of progression speaks favorably for bismarsen.

BISMARSEN IN LATENT AND WASSERMANN-FAST SYPHILIS

As noted previously by Stokes, Miller and Beerman, changes in the serologic status of the blood, clinical progression of the disease and tonic effects are the only criteria of the beneficial results of therapy in latent syphilis. The patients in this study with latent syphilis who were not included in the Stokes, Miller and Beerman review were given bismarsen largely because of reactivity to other arsenicals and often after previous treatment had been contraindicated for other reasons. In addition, there were 40 patients whose data were not suitable for analysis because they were seronegative before treatment was started. Therefore, of the 299 patients with latent syphilis, only 92 had data eligible for full analysis. Fifteen of these had fixed positive serologic reactions of the blood; 41.3 per cent of this total group (38 patients) underwent a reversal to negative, and about half of the patients with fixed positive reactions had a reversal to negative. In confirmation of our previous impression, our data suggest that if serologic reversal takes place at all it occurs relatively early after bismarsen therapy is begun rather than after a long series of injections.

Patients with latent syphilis whose treatment was begun after the Stokes, Miller and Beerman report of 1931 were found to sustain weight gains and other tonic effects, as previously noted.

Of the 299 patients with latent syphilis, 121 had had one or more reexaminations since 1931. Of the group reported on in 1931, 16 had examinations prior to 1931 and during the interim. Twenty-eight of these patients were observed from one to five years, 65 from five to ten years and 28 from ten to fourteen years. Of these 121 patients, there were only 4 in whom any signs of progression could be detected. One had questionable syphilis of the central nervous system, 1 had progression of syphilis of the central nervous system with a positive reaction of the spinal fluid; 1, who had received only 8 injections of bismarsen, had neurorelapse. He was normal in 1932 and had neurosyphilis in 1939. In 1 patient a murmur developed after 36 injections of bismarsen. Eight patients had died. The cause of the death of 7 was determined and none died of syphilis. The cause of death of the eighth patient was not determined. Of the 299 patients with latent syphilis, 143 had one or more cerebrospinal fluid examinations before, during or after bismarsen therapy. Of these, 9 at some time or other had some abnormality. Three who had cerebrospinal fluid formulas of grades 1, 2 and 3, respectively, all had negative reports after further bismarsen therapy and observation. One patient who had a cerebrospinal fluid relapse progressed to clinical neurosyphilis. One whose spinal fluid examination gave positive results had received only 8 bismarsen injections; 4 whose cerebrospinal fluid examination gave negative results on admission were later found to have positive reactions. The fluid of 1 of these, however, had a formula of grade 3.

BISMARSEN IN CARDIOVASCULAR SYPHILIS

Because bismarsen was rated by Stokes, Miller and Beerman as both a safe and an effective drug in the treatment of aortic types of vascular syphilis, an opinion concurred in by Moore and his associates,[17] we treated 70 patients with cardiovascular syphilis in addition to the 40 reported on by Stokes, Miller and Beerman. The patients we treated were usually elderly white persons or somewhat younger Negroes. In the new group there were 37 patients with aortitis, 2 with aortitis and beginning aneurysm, 7 with aortic aneurysm, 1 with carotid aneurysm, 10 with aortic regurgitation, 2 with aortic regurgitation and aneurysm, 2 with mitral stenosis which the cardiologists said was syphilitic, 1 with coronary occlusion, 7 with advanced cardiovascular disease and 1 with hypertension. (Three of the patients with cardiovascular disease had neurosyphilis.) Among the 40 patients previously studied, 20 had early aortitis, 9 had aortic regurgitation, 7 had aneurysm, 5 had myocarditis and 6 had miscellaneous conditions.

No new serologic data could be obtained from study of our patients because most of them had previously received other therapy, with reversal of the serologic tests of the blood to negative. However, in 22 patients from 6 to 60 injections of bismarsen produced little effect on the serologic reactions of the blood (Kolmer, Kahn and Kline tests).

Twenty of the patients with cardiovascular syphilis had cerebrospinal fluid examinations after institution of bismarsen therapy. One patient whose spinal fluid had previously given a positive reaction (type 3) had a negative reaction, and another whose fluid had previously given a positive reaction was not reexamined after institution of treatment.

Careful reexaminations, usually confirmed by the cardiologist with the aid of roentgenologic, electrocardiographic and other special studies, were made of 52 patients, and follow-up reports were obtained from official sources whenever possible on 33 patients who had died. The patients who had one or more reexami-

17. Moore, J. E.; Dunglade, J. H., and Reisinger, J. C.: Treatment of Cardiovascular Syphilis: Results Obtained in Fifty-Three Patients with Aortic Aneurysm and in One Hundred and Twelve with Aortic Regurgitation, Arch. Int. Med. 49: 879 (June) 1932.

nations had been observed up to fourteen years or more (one to five years, 30 patients; five to ten years, 17 patients; ten to fourteen or more years, 5 patients).

Of the patients with aortitis, 10 had improved, 14 showed no change, 3 were worse and there were no data on 25. Of those who died with aortitis, there were none whose death could be directly attributed to the syphilitic cardiac lesion. Of the patients with aortitis and beginning aneurysm, 1 was improved, the condition of 6 was the same, 3 had progressed unfavorably and 1 had died (cause of death undetermined). Of the patients with aneurysm, 1 had improved, the condition had remained stationary in 1 and 7 had died. Of the patients with aneurysm who had died, 1 received only 2, 1 only 4 and 1 only 5 injections of bismarsen; 1 died of pneumonia, 1 of tuberculosis with pulmonary hemorrhage and 2 of aneurysm. Of the patients with aortic regurgitation, 2 had improved, the status of 1 had not changed and 8 had died. Of the deaths, 3 could be attributed to progression of the syphilis. In 1 of the patients the cardiac lesion was advanced before bismarsen therapy was begun. Of the patients with miscellaneous types of syphilitic cardiac lesions, none were improved, 3 showed no change (1 of these subsequently died of coronary occlusion), 8 were worse and 10 had died. Of the 10 who died, the cause was not determined in 4 and in only 2 of the remaining 6 could blame be thrown on the advancing syphilitic heart disease.

From these data, considering the fact that our patients were largely poor risks to begin with, we feel that bismarsen is a safe and effective drug for patients with cardiovascular syphilis.

BISMARSEN IN PRENATAL SYPHILIS

Recent interest in the use of bismarsen in the treatment of prenatal syphilis is evidenced by the publications of Chambers and Koetter,[18] Marks[19] and Reilly.[20] All three studies indicate that bismarsen is an effective antisyphilitic agent which has added features of simplicity of administration and low toxicity.

Our clinical material comprises the 40 cases studied by Stokes, Miller and Beerman and 107 others. Our total group has the shortcomings stated by Stokes, Miller and Beerman in that the cases have little value for study of the acute effects of bismarsen, since they are largely instances of the equivalent of late latent acquired syphilis. They do have much value, however, from the standpoint of the ultimate effects of bismarsen treatment in the prevention of late manifestations of this phase of syphilis. We still feel that the slowness of action of bismarsen precludes its use in the treatment of acute interstitial keratitis.

No significant differences have been noted in the effect of bismarsen on the serologic reaction of the blood in prenatal syphilis from those expressed by Stokes, Miller and Beerman.

Cerebrospinal fluid examinations were made one or more times on 52 patients with congenital syphilis. Of these, 4 had positive reactions; 1 had a positive reaction of type 3 after 20 injections of bismarsen, which became a type 2 reaction after 41 injections and later a type 1 reaction. The use of other therapy was contraindicated. Another patient had a type 3 cerebrospinal fluid formula after treatment with bismarsen but had had no cerebrospinal fluid examination before bismarsen therapy (type 2). The reaction of the fluid became negative during treatment. The fourth patient with late prenatal syphilis, after 24 injections of bismuth salts and 34 of bismarsen, had a type 3 cerebrospinal fluid formula. This formula was maintained in spite of trypars-amide therapy.

Aside from its specific effects in syphilis, bismarsen was found to produce weight gain and other tonic effects in patients with congenital syphilis.

Eighty-nine patients with congenital syphilis were reexamined in the course of the present study. These patients were observed from one to fourteen years (30 from one to five years, 40 from five to ten years and 19 from ten to fourteen years). Of these, 1 showed a relapse of interstitial keratitis after treatment was stopped; 1 with prenatal neurosyphilis had progression, while 1 with this type of neurosyphilis improved. No evidence of progression was noted in the remaining patients. Three of the patients had died. None of the deaths was due to syphilis.

Special mention must be made of our experience with interstitial keratitis. In 1 patient the interstitial keratitis disappeared after 9 injections of bismarsen, returned after 22, cleared quickly but relapsed after 30 injections of bismarsen and an eight month lapse of treatment. In another patient, previously well, interstitial keratitis developed during bismarsen therapy, an occasional occurrence under any form of treatment. A third patient, with Clutton's joints, responded well but interstitial keratitis developed in spite of bismarsen therapy. In a fourth patient interstitial keratitis relapsed. This patient had received 95 injections of bismarsen to 1933. In 1935 the serologic reactions of the blood and the reactions of the cerebrospinal fluid were negative. In 1938 the patient had interstitial keratitis in the left eye. This rather unpredictable experience with this ocular manifestation of prenatal syphilis is in keeping with our experience with other antisyphilitic drugs used for its treatment. The experience does not condemn any of the drugs but merely reemphasizes the need of an ideal treatment for this ocular condition (cf. Givan and Villa[21] and Klauder and Vandoren[22]).

On the whole, as far as any therapy for prenatal syphilis can be estimated, bismarsen seems of value for the average patient. For patients with interstitial keratitis, other types of therapy (fever) combined with use of the arsenical are indicated.

BISMARSEN IN CUTANEOUS AND OSSEOUS GUMMA

In addition to the 35 patients reported on by Stokes, Miller and Beerman, we had 22 patients with osseous and cutaneous gumma. Most of these patients had received other therapy, but in 6 healing took place at a moderate rate while in 1 it took place with remarkable speed. On the whole, however, healing takes place more slowly with bismarsen than with the other arsenicals; bismarsen, however, may be used advantageously in the treatment of patients who, because of their poor physical status, may not tolerate other arsenicals. Of 23 patients reexamined, there were no signs of active syphilis in 22. Of the 23, 7 were observed up to five years, 6 from five to ten years and 6 from ten to four-

18. Chambers, Stanley O., and Koetter, George F.: Bismarsen in the Treatment of Congenital Syphilis, Arch. Dermat. & Syph. **35**: 1065 (June) 1932.

19. Marks, Thomas M.: Treatment of Congenital Syphilis with Bismuth Arsphenamine Sulphonate (Bismarsen), Kentucky M. J. **30**: 404 (July) 1932.

20. Reilly, W. A.: Results of Treatment of Congenital Luetics with Bismuth Arsphenamine Sulphonate (Bismarsen) for Five Years, California & West. Med. **42**: 429 (Dec.) 1935.

21. Givan, T. B., and Villa, G.: Trisodium Arsphenamine Sulfonate (Trisodarsen) in the Treatment of Congenital Syphilis, Am. J. Syph., Gonor. & Ven. Dis. **23**: 771 (Nov.) 1939.

22. Klauder, J. V., and Vandoren, E.: Analysis of Five Hundred and Thirty-Two Cases of Interstitial Keratitis with Particular Reference to Standardization of Treatment, Ven. Dis. Inform. **22**: 307 (Sept.) 1941.

teen years. In 1 there was questionable neurosyphilis. Seven of the patients had died. Four of the deaths were not related to treatment, and the cause of 1 was unknown.

BISMARSEN IN NEUROSYPHILIS

Our interest in the use of bismarsen in the treatment of neurosyphilis has in the past centered chiefly on the symptomatic improvement of specific complaints and on serologic results. In our present data, based on a total of 98 patients with various types of neurosyphilis, including 17 with asymptomatic neurosyphilis, 49 with tabes dorsalis, 5 with the tabetic form of dementia paralytica, 10 with dementia paralytica, 12 with "central nervous system syphilis," 2 with vascular syphilis and 3 with miscellaneous types, our chief attention has been focused on ultimate results based on reexaminations of patients treated wholly or in part with bismarsen. It is necessary again to point out that many of our patients were not ideal risks before treatment was instituted. Seventy-five were 30 years of age or more and 56 were 40 or more on admission.

Treatment with as many as 60 injections of bismarsen had no effect on the cerebrospinal fluid formula of 11 patients with various types of neurosyphilis (formula types: 2, 5 patients; 3, 6 patients). The cerebrospinal fluid formulas of 16 patients had improved and those of 5 patients were worse after treatment with bismarsen (type 2, 4; type 3, 1).

Fifteen patients with neurosyphilis died during the course of our observation. These patients had been observed for from one to thirteen years. None of this group (we had data on 10) died as a result of progression of the neurosyphilis.

Forty-five patients who were reexamined one or more times in the course of the present study had no evidence of progression of their neurosyphilis. Only one additional patient was better, and 4 were worse.

Aside from the previously reported subjective improvement in patients with neurosyphilis treated with bismarsen, we believe that for the treatment of such patients who are intolerant of fever or of other chemotherapy bismarsen is a useful substitute.

SUMMARY AND CONCLUSIONS

1. Bismarsen is a relatively nontoxic and easily administered drug for the treatment of syphilis. Although it was frequently used in treating patients who had shown unfavorable reactions to other arsenicals, its incidence of local and systemic reactions was relatively low, only 5 cases of arsphenamine dermatitis and 5 cases of hemorrhagic purpura among a total of 823 patients being observed. There were no fatalities.

2. Bismarsen has a good effect in early syphilis, but it results in slower healing and has a slower spirillicidal action than do other arsenicals. Its action in preventing progression, neurosyphilis and relapses of all types is excellent.

3. In latent syphilis the reversal of the fixed positive serologic reaction and the prevention of neurosyphilis and other forms of clinical syphilis are effectively accomplished by bismarsen.

4. Bismarsen is a safe and effective drug for the treatment of cardiovascular syphilis.

5. The late complications of congenital syphilis are controlled through the use of bismarsen. Its action is too slow, however, for the treatment of active interstitial keratitis, and, as with all antisyphilitic drugs, erratic flares and relapses may occur.

6. The treatment of cutaneous and osseous gummatous syphilis with bismarsen produces a uniformly favorable response, but the healing effect is slower than that of other arsenicals.

7. Use of bismarsen is not the treatment of choice for neurosyphilis, but for persons for whom fever therapy and other forms of chemotherapy are contraindicated, it is a useful substitute.

THE USE OF BISMUTH COMPOUNDS IN SYPHILOTHERAPY

II. RESULTS OF TREATMENT OF LATENT SYPHILIS BY BISMUTH COMPOUNDS COMBINED IN PART WITH ARSENICALS

DAVID KAHN, M.D.
AND
S. WILLIAM BECKER, M.D.
CHICAGO

The use of bismuth compounds in the therapy of syphilis was discussed by Walsh and Becker in 1940.[1] From a review of the literature they concluded that, "although in some instances it will 'cure' syphilis, it cannot be relied on as the sole antisyphilitic drug to the exclusion of the arsphenamines." They reported excellent results from the treatment of early syphilis by means of bismuth given in about twice the usual amount and combined in part with an arsenical preparation. They also obtained good results in asymptomatic neurosyphilis and tabes dorsalis by a method which used prolonged bismuth therapy in place of the intensive measures such as fever, intraspinal and tryparsamide therapy. Since this publication, very few reports relative to treatment of syphilis by bismuth have appeared in the available literature. Carrera[2] reported a small series of patients with early syphilis treated by means of liposoluble bismuth only. There were 7 with seronegative primary syphilis, 12 with seropositive primary syphilis and an unstated number with secondary syphilis. The serologic reactions had become negative in all instances and had remained so from one to two years. The cerebrospinal fluid of 10 patients was examined and was negative in all instances. Carrera stated that the results were as good as those obtained from combined arsenical-bismuth treatment. The other publications deal with complications from treatment and will be discussed later.

Our purpose in this report is to present the results in late latent syphilis obtained at the University of Chicago Clinics by the use of large amounts of bismuth combined with a moderate amount of an arsenical and compare them with the results reported by the Cooperative Clinical Group.[3] Patients included in our group of late latent syphilis include those with asymptomatic syphilis who have had the disease for three or more years. The Cooperative Clinical Group places the dividing line between early and late latency at four

From the Section of Dermatology, Department of Medicine, University of Chicago.

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1. Walsh, E. N., and Becker, S. W.: The Use of Bismuth Compounds in Syphilotherapy, J. A. M. A. **116**: 484 (Feb. 8) 1941.

2. Carrera, J. L.: Treatment of Syphilis Exclusively with Bismuth, Rev. argent. dermatosif. **23**: 622, 1939.

3. Moore, J. E., and others: Cooperative Clinical Studies in the Treatment of Syphilis: Latent Syphilis, Ven. Dis. Inform. (a) **13**: 317 (Aug. 20), (b) **13**: 351 (Sept. 20), (c) **13**: 371 (Oct. 20), (d) **13**: 389 (Nov. 20), (e) **13**: 407 (Dec. 20) 1932, (f) **14**: 1 (Jan.) 1933.

years. Nearly all our patients had been infected for four years or more; hence for practical purposes our material is comparable with the late latent cases in the Cooperative Clinical Group study. Approximately 30 per cent of their cases were of early latent syphilis, which tends to influence favorably the total results, since the outcome in early latency is better than in late latency. Our results in treating early latent syphilis have been reported previously in connection with the treatment of early syphilis.[1]

The importance of treating latent syphilis is well stated by Moore, who points out that "nearly every patient with a late lesion of syphilis has passed through the stage of latency." Potential infectiousness for others, although slight in latent syphilis, is still a real enough hazard to indicate treatment. Other indications are the prevention of clinical progression or relapse and the prevention of the birth of syphilitic children.

Seventy-six white men and 124 white women ranging in age from 20 to 60 years were treated according to the system of therapy shown in table 1. Treatment consisted of a minimum of six courses of bismuth subsalicylate in oil (eight to ten weekly intragluteal injections), with rest periods of one month. A course of an arsenical (six to eight intravenous injections at weekly intervals) is given simultaneously with the second, fourth and sixth bismuth courses. Treatment is then continued with courses of bismuth at progressively longer intervals, namely three months, six months, and one year. A yearly course of bismuth is then given as long as the serologic test shows any degree of positivity. One cc. of the bismuth subsalicylate in oil contained 0.057 to 0.060 Gm. of metallic bismuth. The bismuth subsalicylate supplied by some manufacturers contains 0.075 or even 0.1 Gm. of metallic bismuth per cubic centimeter, so that the amount given per treatment must be decreased slightly to compensate for the greater concentration. When treated for the full course outlined in table 1, each patient received a minimum of 6.5 to 7 Gm. of metallic bismuth; those with persistently positive blood reactions received more.

Various arsenicals have been used in combination with bismuth subsalicylate. Formerly, arsphenamine or neoarsphenamine was given in courses of six weekly intravenous injections. An experimental arsenical, thioarsene, was employed, entirely or in part, in 65 per cent of cases. This drug was shown to be an unsatisfactory preparation as compared with arsphenamine, when used alone or in alternation with bismuth. In recent years mapharsen has been the usual arsenical employed, a course consisting of eight weekly injections.

Our plan of therapy differs in several respects from the methods used by the five clinics in the Cooperative Clinical Group study. The cooperating clinics usually employed alternating courses of arsenical and heavy metal (bismuth or mercury) either continuously or intermittently. In our system of therapy treatment is always instituted with a course of bismuth, and subsequently the arsenical is given simultaneously with bismuth. Treatment was originally given twice a week, the arsenical and one half of the bismuth dose on one visit and the other half of the bismuth dose on the second visit. In recent years, for the convenience of the patients, who travel an average round trip distance of 13 miles, administration of the arsenical and bismuth was made on the same day, at weekly intervals. Since no greater percentage of complications was seen, this method has been in use for several years.

PREVIOUS TREATMENT

Approximately 30 per cent of our patients had received treatment prior to observation. Information relative thereto was frequently incomplete. In attempting to classify the previous treatment, we used the following criteria:

Poor: (*a*) medication by mouth for a month or two, or less; (*b*) intragluteal treatment or inunctions only, or (*c*) less than one course of intravenous and intragluteal injections.

Fair: (*a*) one course of intravenous and intragluteal injections, or (*b*) arsenical therapy, regardless of the amount.

Good: two courses of intravenous and intragluteal injections.

Excellent: three or more courses of intravenous and intragluteal injections.

TABLE 1.—*Treatment for Uncomplicated Late Syphilis*

Weeks	Neoarsphenamine, Gc.	Bismuth Salicylate, Gc.
1 to 10	...	10 weekly injections, 0.5 to 2 cc.
	1 month's rest (optional)	
11	0.45	0.5
12	0.6	1.0
13	0.6	1.0
14	0.6	1.0
15	0.6	1.0
16	0.6	1.0
17	0.6	1.0
18	0.6	1.0
	1 month's rest	
27 to 29	...	3 weekly injections, 0.5 to 2 cc.
	1 month's rest	
33	0.45	0.5
34	0.6	1.0
35	0.6	1.0
36	0.6	1.0
37	0.6	1.0
38	0.6	1.0
39	0.6	1.0
40	0.6	1.0
	1 month's rest	
44 to 51	...	8 weekly injections, 0.5 to 2 cc.
	1 month's rest	
55	0.45	0.5
56	0.6	1.0
57	0.6	1.0
58	0.6	1.0
59	0.6	1.0
60	0.6	1.0
61	0.6	1.0
62	0.6	1.0
	3 months' rest	
74 to 83	...	16 weekly injections, 0.5 to 2 cc.
	6 months' rest	
107 to 116	...	10 weekly injections
	1 year's rest	
168 to 177	...	10 weekly injections

If blood test is negative, place on observation; if positive, give one course of bismuth each year

Iodides may be given throughout

This schedule is for a healthy adult male, and the dosage of neoarsphenamine should be slightly smaller for women; the bismuth dosage may remain the same

These criteria are based on the total amount of treatment previously received and not on the regularity and time intervals involved. Most of the previous treatment was not efficacious on account of long rest periods between courses. The treatment previously received was as follows: none in 131; poor in 10, fair in 33, good in 8 and excellent in 8. There were no data in 10 instances. This treatment was not considered in the evaluation of our own therapeutic results.

In our group of patients, initial examination revealed no diagnostic physical evidence of syphilis, although certain suggestive signs were occasionally found, such as irregular, unequal or sluggish pupils, abnormal knee jerks or an accentuated aortic second sound. Such suggestive signs were present also in some of the cases in the Cooperative Clinical Group report. Examination of the cerebrospinal fluid showed no abnormalities among 199 patients. One patient refused spinal puncture. There were roentgenograms or fluoroscopic examination of the cardiovascular stripe at various times during treatment in 21 per cent of cases. The duration of observation ranged from two to thirteen and one-half years. Approximately one half of the patients were observed for more than five years.

ANALYSIS OF RESULTS

In summarizing the final outcome of therapy we have generally utilized the Cooperative Clinical Group [3b] terms and criteria. In those instances in which these terms are not applicable to our material or in which there was doubt in interpreting the criteria, we have defined our standards. The results of treatment in our series as compared with those of the total material of the Cooperative Clinical Group series is presented

TABLE 2.—*Results of Treatment of Latent Syphilis*

	University of Chicago Clinics	Cooperative Clinical Group	
		Latent Cases	Late Latent Cases
Number of patients	200	1,013	1,197
Observation period	2 yrs. or more	2 yrs. or more	1 yr. or more
Satisfactory results	66.5%	51.7%	53.7%
Clinical relapse	2.5%	4.6%	3.8%
Serologic relapse	3.0%	10.3%	12.3%
Serologic fast	26.0%	27.6%	24.7%
Still under treatment and doing well	.....	6.3%	15.3%
Dead	.....	1.4%	2.1%

in table 2, which includes data from tables XIII [3b] and XIX [3c] of the Cooperative Clinical Group. The final results are classified as follows:

Result satisfactory. No evidence of clinical progression or relapse. Physical examination and cerebrospinal fluid negative. Serologic test negative or doubtful (1 or 2 plus positive).

Clinical relapse or progression.

Serologic relapse. This classification includes patients who, after having been first observed with or having subsequently achieved a repeatedly negative or a 1 plus Kolmer or Kahn reaction as a result of treatment, later had a positive serologic reaction which was positive twice in succession. A repeatedly 1 plus reaction which changed to a repeatedly 3 plus reaction was classed as a relapse; a 2 plus reaction which changed to a 3 plus reaction was not considered a relapse.

Serologic fastness. All patients in whom the Kolmer or Kahn reaction was irreversibly positive (3 or 4 plus) after treatment.

In the Cooperative Clinical Group study the term "still under treatment" is used. Because of the relatively longer duration of our treatment and the fact that all our patients were observed for two or more years, this category is unnecessary in our analysis, since we have no comparable data. The final category "dead" has not been used in classifying our results. The reasons for this omission will be given.

In critical evaluation of table 2, the following facts should be borne in mind:

1. There are possible differences in interpreting the criteria used in defining the results.

2. The Cooperative Clinical Group study includes both early and late latency; our results are for late latent syphilis only.

3. The serologic tests used in the Cooperative Clinical Group study included various modifications of the Wassermann test, the Kahn and the Hinton flocculation tests. Hence many of the patients were subjected to a less sensitive test than others, which favorably influences the total results. Both the Kolmer complement-fixation and the Kahn flocculation test were routinely performed on each blood specimen reported by us, and a positive result of either test is recorded.

4. Table 2 records the final status at the end of the observation period. In both the Cooperative Clinical Group series and ours, a patient having a clinical or serologic relapse who subsequently received further treatment with satisfactory ultimate results is placed in the category of "result satisfactory." Such cases will be accounted for in our summary.

5. Six patients in our series are known to have died after observation periods ranging from two to twelve years. There was one accidental death, one suicide, one death from carcinoma of the stomach and one from carcinoma of the liver. The cause of death of 2 patients is not known, of whom 1 had an aortic aneurysm and was classified under "clinical relapse or progression." Since in no instance in our series was death known to have been caused by syphilis, the category "dead" is not used in our results.

The comparison of final results indicates that the most favorable outcome in most categories was obtained by our method of treatment. The use of percentages in a small number of patients at times gives high figures. The inference drawn from the Cooperative Clinical Group study that large amounts of heavy metal are more successful than arsphenamine in producing clinical and serologic negativity in latent syphilis seems to be verified by our report.

Our results are more significant when compared exclusively with cases of late latency from the Cooperative Clinical Group study. However, in this comparison, the Cooperative Clinical Group results are somewhat unfavorably influenced by the inclusion of some cases observed for less than two years.

Five cases are included in the category of "clinical relapse or progression." In 4 of these patients the following suggestive or diagnostic evidence of cardiovascular syphilis developed: in 1 aortitis, in 1 mild aortic insufficiency, in 1 aortic aneurysm and in 1 widening of the aortic arch (a woman aged 48). These cases may well represent clinical progression rather than relapse, since subclinical involvement of the aorta may have been present before the institution of therapy. In 1 case classified as a "relapse," retrobulbar neuritis and papillitis developed, which were not proved to be of syphilitic origin. In a sixth case which is not included as presenting a relapse in the final results, the initial cerebrospinal fluid examination was negative, with the exception of the colloidal gold reaction, which showed 1122100000. Subsequent examination revealed a positive spinal fluid Wassermann reaction, and a third specimen was reported negative.

Of the 6 patients with a "serologic relapse" at the time of the last observation, the Kolmer reaction became positive in 4 and the Kahn reaction in 2 instances. A total of 20 patients showed a serologic relapse at some

time during the period of observation. In this group there were thirteen Kolmer relapses, five Kahn relapses and 2 cases in which both tests showed a relapse. Although the term "serologic relapse" has been applied to these cases, we believe that there were actually few true relapses but rather that there was a vacillation in the quantity of reagin in the blood, which frequently occurs from time to time.

Of the 52 patients whose serologic test persisted as positive at the last observation, it is of interest to note the greater incidence of "Kahn-fastness" as compared with "Kolmer-fastness." In 19 instances both tests were "fast." Of the remainder, there were only 3 instances of "Kolmer-fastness" as compared with 30 of "Kahn-fastness." Thus, measured by the Kolmer

those in the serologic fast category in table 2 is due to the recording of some Wassermann-fast cases in the more important classes of clinical or serologic relapse.

To illustrate the influence of large amounts of bismuth on the clinical outcome of therapy in which varying amounts of arsenicals are used, table 4, containing data from table XV of the Cooperative Clinical Group [36] report, is presented. In our series, much bismuth was given in addition to and also simultaneously with the specified amount of arsenical. The higher proportion of satisfactory results with our method is apparent when the two series are compared. The surprisingly high proportion of favorable results in the small group of patients who received little or no arsphenamine and much heavy metal in the Cooperative Clinical Group

TABLE 3.—*Results of Treatment in Latent Syphilis, According to the Total Length of Observation*

	Less Than 2 Years		2-5 Years		5-10 Years		More Than 10 Years	
	University of Chicago Clinics	Cooperative Clinical Group	University of Chicago Clinics	Cooperative Clinical Group	University of Chicago Clinics	Cooperative Clinical Group	University of Chicago Clinics	Cooperative Clinical Group
Number of patients	....	923	98	686	80	287	13	40
Percentage of patients								
With satisfactory results	....	15.2	67.3	86.1	68.7	68.6	84.6	85.0
With clinical relapse	....	2.4	1.0	4.5	2.2	5.2	15.4	2.5
With serologic relapse	....	9.4	3.0	10.3	3.4	10.8	0	5.0
Serologic fast	....	51.0	28.7	31.6	24.7	20.0	0	7.5
Still under treatment, doing well	....	22.0	....	8.0	....	3.1	....	0
Dead	....	1.2	....	1.6	....	1.1	....	0

Thirty per cent of cases in the Cooperative Clinical Group were of early latent syphilis.

TABLE 4.—*Results of Treatment for Latent Syphilis, by Amount of Arsenical Administered, in Patients Observed for Two or More Years*

	Number of Patients		Results Satisfactory, per Cent		Clinical Relapse, per Cent		Serologic Relapse, per Cent		Serologic Fast, per Cent		Still Under Treatment, per Cent		Dead, per Cent	
	University of Chicago Clinics	Cooperative Clinical Group	University of Chicago Clinics	Cooperative Clinical Group	University of Chicago Clinics	Cooperative Clinical Group	University of Chicago Clinics	Cooperative Clinical Group	University of Chicago Clinics	Cooperative Clinical Group	University of Chicago Clinics	Cooperative Clinical Group	University of Chicago Clinics	Cooperative Clinical Group
No arsphenamine; little or no heavy metal	...	20	....	50	...	5.0	....	20.0	....	25.0	...	5.0	...	...
Arsenical injections														
9 or less	6	148	66.7	68.3	...	4.7	....	10.6	33.3	26.4	...	7.4	...	2.7
10-19	110	201	71.8	54.3	4.3	5.1	1.7	7.2	20.7	28.9	...	7.2	...	1.0
20-29	72	257	61.9	50.6	...	2.7	4.2	13.2	31.9	28.1	...	6.2	...	1.6
30-39	4	106	50.0	45.2	...	9.6	25.0	8.7	25.0	33.7	...	3.9	...	1.9
40 or more	2	72	....	63.1	...	13.9	....	16.7	100.0	29.2	...	5.5	...	...
Little or no arsphenamine; much heavy metal	...	21	....	85.2	...	...	....	4.8	....	....	...	...	...	...

Thirty per cent of patients in the Cooperative Clinical Group had early latent syphilis.

test alone, only 11 per cent of our patients were Wassermann fast as compared with 26 per cent when both tests were employed.

In table 3 our treatment results, according to the total length of observation, are compared to similar data in table XVIII of the Cooperative Clinical Group [36] report. Both series show a greater proportion of satisfactory results as the duration of observation increased. However, the comparison indicates also that a higher percentage of favorable results was obtained within a two to five year interval by our method of therapy.

The relation of clinical outcome to the duration of observation may be shown also by a comparison of the serologic reactions that were obtained two years after the institution of treatment with the final serologic status. After two years a positive (3 plus or 4 plus) Kolmer reaction was present in 31 per cent of cases and a positive Kahn reaction in 40.5 per cent. These percentages had decreased at the final report to 14.5 per cent Kolmer positive and 27.5 per cent Kahn positive. The discrepancy between these percentages and study is also confirmatory evidence of the efficacy of heavy metal therapy in latent syphilis.

In support of this finding, the results of treatment of 4 patients who received little or no arsenical and much heavy metal are analyzed. Two patients received no arsenical; 1 patient received one injection of thioarsene, and 1 patient received nine injections of bismarsen. One of these cases has been included in the previous gross material. The ages ranged from 47 to 64 years. Arsenicals were avoided in the treatment of these patients because of advanced age, hypertension or nonsyphilitic cardiovascular disturbance. The dosage ranged from forty to eighty injections of bismuth. Satisfactory results with clinical quiescence and the reversal of the serologic reaction to negative were obtained in all cases.

COMPLICATIONS FROM THERAPY

An important advantage of the method of therapy used in our series has been the relative freedom from serious treatment complications, either from bismuth

or from the arsenical. By using combined treatment, i. e. bismuth and an arsenical simultaneously, a smaller dose of both drugs may be employed, thus reducing the toxicity without impairing the therapeutic efficiency. This observation was made by Schamberg [4] and Wright.[5] The results of combined therapy in our clinic have led us to the same conclusion. Experimental confirmation of this statement is found in the study of Clausen, Langley and Tatum.[6] In working with experimental rabbit syphilis, they observed that the therapeutic effects of fractional doses of arsenicals and bismuth given together are mathematically additive, but the toxic effects are less than additive. Thus, the administration of 75 per cent of the minimal curative dose of an arsenical plus 25 per cent of the minimal curative dose of bismuth, or vice versa, will cure syphilis in rabbits. However, from 70 per cent to 90 per cent of the maximum tolerated dose of mapharsen plus 70 to 90 per cent of the maximum tolerated dose of bismuth, when given together, did not cause death. We have not noted any increase in complications from combined treatment over those reported for the alternating method. However, Wells and Sewell [7] reported albumin and microscopically visible red blood cells and casts in the urines of patients being treated in the tropics with combined bismuth and arsenical medication. Neoarsphenamine alone or a bismuth preparation, bicrecol, alone gave practically no untoward results. There was, however, no evidence of impaired renal function in any case. The authors believe that the profuse sweating in the tropics with associated small output of urine, which is concentrated, may result in toxic concentration of heavy metals in the convoluted tubules.

Since many of our patients received extremely large amounts of bismuth as compared to the total dosage usually given, the question of renal damage arises. One hundred patients received from forty to eighty injections of bismuth, 70 received eighty-one to one hundred injections and 30 received more than 100 injections. One patient who received bismuth therapy for lupus erythematodes subsequent to the completion of antisyphilitic treatment was given a total of one hundred and seventy-eight injections. Thus 10 to 15 Gm. or more of metallic bismuth equivalents were often administered. Periodic examinations of the urine were routinely performed on all patients. In 42 per cent of cases there were transient urinary changes, traces of albumin and small numbers of hyaline casts being the most frequent findings. Erythrocytes and cellular and granular casts were also reported occasionally. These urinary changes were often noted in patients with complicating conditions such as local pelvic disturbances, renovascular disease and pregnancy, so that the role of bismuth as the sole causative factor was often questionable. In no case was there evidence of serious renal damage from bismuth.

Stomatitis or gingivitis developed in 10 cases during bismuth therapy. This complication was controlled by the proper dental and oral hygienic measures. Three patients complained of fatigue after an injection of bismuth; 2 noted anorexia. There was 1 instance each of dermatitis, chill, aching of the joints, stiffness of the hands and knees, and leg pain (neuritis?). Herpes zoster appeared in a few cases but was not necessarily considered a complication of bismuth therapy.[8] Bancroft [9] found herpes zoster in 13 of 1,181 patients treated for syphilis at the Los Angeles Venereal Clinic. Eleven patients received both bismuth subsalicylate and neoarsphenamine; 2 received bismuth only. No relation to varicella, the virus of which is considered to be one cause of herpes zoster, was observed. He believes that bismuth may cause herpes zoster. It is also possible that some of the eruptions which originate in the lumbar region and progress downward were caused by trauma from injections into the buttocks. All complications occurring in our patients were controlled by the temporary employment of smaller doses of the drug or short rest periods from treatment. In a few cases the substitution of a product from a different pharmaceutical company was adequate. In no case was it necessary to abandon bismuth therapy permanently.

SUMMARY

The results of treatment of 200 patients with late latent syphilis by means of bismuth combined in part with an arsenical were compared with the results obtained by the Cooperative Clinical Group. The latter report includes both early and late latency, the dividing line being based on a duration of infection less than or greater than four years. All of our patients had had syphilis for three years and most of them for four years. They were observed for from two to thirteen and one-half years. Results presented in the Cooperative Clinical Group study suggested that maximum results are obtainable with about twenty injections of arsphenamine and large amounts of heavy metal, the latter given over long periods of time. The most favorable outcome in most categories was obtained by our method of treatment. The total amount and duration of bismuth therapy are greater in our method than in the Cooperative Clinical Group series. It is interesting to note that the one cooperating clinic which used relatively large amounts of heavy metal had the highest proportion of satisfactory clinical and serologic results in their series.

Complications from therapy by bismuth combined with an arsenical included transient urinary changes, stomatitis or gingivitis, fatigue, anorexia, dermatitis, chill, aching of the joints, stiffness of the hands and knees, leg pains and herpes zoster. All complications were controlled by the temporary employment of smaller doses of the drug or rest periods from treatment. In no case was it necessary to abandon bismuth therapy permanently.

Our impression that combined bismuth and arsenical therapy is superior to the same drugs used in alternating courses has been given experimental support by the work of Clausen, Langley and Tatum,[6] who showed that the therapeutic effects of fractional doses of arsenicals and bismuth given together are mathematically additive, while the toxic effects are considerably less than additive.

950 East Fifty-Ninth Street.

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BISMUTH HEPATITIS

A SURVEY OF ONE HUNDRED AND TWENTY-ONE CASES

GEORGE V. KULCHAR, M.D.
SAN FRANCISCO
AND
WILLIAM J. REYNOLDS, M.D.
SAN ANSELMO, CALIF.

For many years extensive use has been made of bismuth compounds in the treatment of syphilis. Hepatitis due to bismuth, however, has only recently received general recognition. The failure to realize that hepatitis may result from the use of the drug is in a large measure due to the common tendency to attribute jaundice occurring during bismuth therapy to either relapse of the disease, intercurrent infection or previously received arsphenamine. Attention was first directed to bismuth as the cause of hepatitis by Langernon, Paget and Devriendt,[1] who in 1932 reported 13 cases in which jaundice was presumably due to bismuth. Langernon and his associates believed, however, that bismuth is not "hepatotoxic" in the sense that the arsphenamines are but that it has rather a nonspecific effect on the liver already damaged by syphilis, alcohol or previous arsenical therapy. The occasional occurrence of hepatitis presumably due to bismuth is likewise contained in reports primarily concerned with postarsphenamine jaundice.[2] A bismuth compound as interim heavy metal therapy is suggested by Soffer [3] as being an important factor in the so-called late or delayed postarsphenamine jaundice.

Interest in bismuth hepatitis was stimulated by the report of 32 cases made by Nomland, Skolnik and McLellan [4] in 1938. The following year in a survey of 100 cases of treatment jaundice Gott and Doyle [5] believed that in 12 the hepatitis was attributable to bismuth. With the exception of Moore,[6] however, most textbooks do not mention bismuth hepatitis as a complication of treatment. The difficulties in determining whether the jaundice is due to bismuth, previous arsphenamine therapy or intercurrent infection are well described by Moore.

On the laboratory side there is some evidence that bismuth may damage the liver. In animals cloudy swelling and central necrosis may result from the injection of amounts larger than the usual therapeutic dose. In man a fatty infiltration of the liver was observed by Dowds [7] in 3 fatalities due to sodium bismuth tartrate, while acute yellow atrophy attributable to the drug has been reported by Albert,[8] Juliusberg [9] and Wollman.[10] The fatalities, however, have for the most part followed the use of large amounts of soluble compounds or the intravenous injection of bismuth—circumstances which result in the rapid absorption of relatively large amounts. Determinations made by Sollmann, Cole and Henderson [11] and by Scholtz and Chaney [12] on the distribution of bismuth indicate that the liver ranks second only to the kidney in the amount contained. Severe anatomic damage, according to Sollmann and his co-workers, materially increases the concentration of bismuth, although minor changes or alterations had little effect on the amount contained. The significance of these observations in relation to bismuth hepatitis will be discussed subsequently.

Jaundice, particularly during the bismuth phase of treatment, has been a frequent occurrence among the prisoners in the State Prison at San Quentin. Of the 1,032 inmates receiving treatment for syphilis between July 1, 1936 and Jan. 1, 1942, 144, or 13.9 per cent, became jaundiced one or more times during the course of treatment. In 121, or 10.3 per cent, of these the hepatitis occurred while bismuth was being given, the remainder receiving either an arsphenamine or tryparsamide at the time jaundice was first noted. As the latter was frequently given simultaneously with bismuth, it was usually impossible to determine which drug was responsible. These consequently are excluded from the present study, which is primarily concerned with bismuth hepatitis.

The treatment system consisted of neoarsphenamine or mapharsen in courses of ten weekly injections given in alternation with iodobismitol with saligenin in courses of twenty weekly injections. In patients with asymptomatic or clinical neurosyphilis, tryparsamide was frequently used in addition. Unless the infection could be established as less than four years in duration or treatment begun elsewhere was being continued, the initial course was routinely iodobismitol with saligenin. Except for interruptions due to reactions or intercurrent illnesses, treatment was received regularly, and in uncomplicated syphilis it was usually continued until the standard amount of thirty injections of an arsphenamine and sixty of iodobismitol with saligenin had been given, unless terminated by reason of transfer or parole.

Since the prison receives only male offenders females are not included in the present series. Of the 121 prisoners in whom jaundice first occurred during the bismuth phase of treatment, 103 were white and 18 were Negroes. The ages varied between 19 and 58, the average being 31.5 years. With the exception of primary syphilis in 2 inmates, all were in the latent stage or had later manifestations of syphilis at the time treatment was started. In 55 instances the duration of the infection was unknown, while in 12 it could be established as being less than one year and in 25 between one and four years in duration at the time treatment

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From the Division of Dermatology and Syphilology, Department of Medicine, Stanford University School of Medicine, and the Medical Department of the State Prison at San Quentin, Calif.

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2. Ruge, H.: Die Zusammenhänge zwischen Syphilis, Salvarsan und der sogenannten katarrhalischen Gelbsucht auf Grund von 2,500 in der Marine von 1919-1929 beobachteten Fällen, Dermat. Wchnschr. **94**: 278 (Feb. 20) 1932. Graffar, M.: Contribution à l'étude des ictères survenant au cours du traitment arsenical, Presse méd. **45**: 661 (May 1) 1937. Willcox, W.: Toxic Jaundice and Antisyphilitic Treatment, Brit. J. Ven. Dis. **9**: 65 (April) 1933. Soffer.[3]

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11. Sollmann, Torald; Cole, H. N., and Henderson, Katherine: Clinical Excretion of Bismuth: VII. The Autopsy Distribution of Bismuth After Clinical Bismuth Treatment, Am. J. Syph., Gonor. & Ven. Dis. **22**: 555 (Sept.) 1938.

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was begun. Of the 121 prisoners with hepatitis due to bismuth 60 had received varying amounts of treatment prior to entry to the prison. None, however, gave a history of previous jaundice due to any cause. Except for gonorrhea in the history of 45 inmates, there were no predominantly common illnesses in the past.

Since jaundice due to either arsenicals or bismuth may occasionally remain undetected for several weeks, there may at times be some difficulty in determining whether the hepatitis is due to the currently used or the previously received drug. Nomland and his co-workers excluded bismuth as the cause if jaundice appeared within twelve weeks of the last injection of an arsphenamine. Since jaundice at times occurs after only a few injections of bismuth in patients who have not received previous arsenical therapy or in patients after many months have elapsed since the last injection of an arsphenamine, the twelve week criteria is not satisfactory applied to the continuous alternating system of treatment. If recognition is given to a delayed hepatitis, it is conceivable that jaundice occurring during the first few weeks of either bismuth or arsenical therapy may actually be due to the drug previously received. For these reasons we have in this study attributed the jaundice to the currently used preparation, realizing that at times the previous medication may have been at least in part responsible for the hepatitis.

Little information is available in the literature as to the incidence of hepatitis due to bismuth. Nomland, Skolnik and McLellan, on the basis of the twelve week criteria, reported the incidence to be 1 in 2,224 injections of bismuth salicylate. When the same criteria are applied for purposes of comparison only, the incidence of the complication following the 36,055 injections of iodobismitol with saligenin given during the period of this study is determined to be 1 in 1,030 injections, or more than twice that reported by Nomland and his associates.

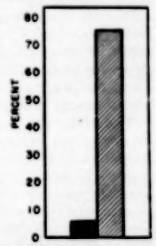

Chart 1.—Comparison of the incidence of hepatitis during initial course of bismuth with and without preceding arsphenamine. Black column, iodobismitol only; shaded column, iodobismitol preceded by arsphenamine.

Treatment was initiated with iodobismitol with saligenin in 82 of the 121 patients with jaundice due to bismuth. Of these, 4 became jaundiced during the first course of bismuth, previous arsenical therapy being excluded as the cause. The remaining 117 patients received arsenicals in some form prior to the bismuth course during which hepatitis occurred. The onset of jaundice was noted within four weeks of the last injection of an arsenical in 34 cases, and in some this rather than the bismuth may have been responsible. Evidence of hepatitis did not appear until four or more weekly injections of bismuth had been given in 83 and not until after eight or more weekly injections in 56 cases. The time intervening since the last injection of an arsenical in these makes it unlikely that the hepatitis is entirely due to previous arsenical therapy. The occurrence of jaundice during the first course of heavy metal in only 4 of the 82 cases in which treatment was initiated with bismuth when compared to the 117 cases in which arsenicals were given prior to the bismuth course during which hepatitis occurred indicates that previous arsenical therapy may be a factor.

As may be expected, the incidence of bismuth hepatitis is influenced by the duration of antisyphilitic treatment. This is not, however, proportional to the amount of arsphenamine previously received. Of the 121 patients, 81 received 4.5 Gm. or less of neoarsphenamine (for equivalent amounts of mapharsen) prior to the bismuth course during which jaundice occurred; 30 received more than this amount. In 6 cases of hepatitis due to bismuth only tryparsamide had been given previously.

The treatment of 33 of the 121 patients with bismuth hepatitis was initiated with an arsphenamine. Of these patients 25 became jaundiced during the first course of bismuth. The influence of previous arsphenamine therapy on the incidence of bismuth hepatitis is shown graphically in chart 1.

Chart 1 indicates that only 4.8 per cent of the patients became jaundiced during the initial course when treatment was begun with the heavy metal as compared to the 75.7 per cent during the first course of bismuth when treatment was initiated with an arsphenamine. Previous arsphenamine therapy would seem to be a factor of considerable importance in predisposing to hepatitis from the use of bismuth.

As may be expected, the incidence of bismuth hepatitis is influenced by the duration of antisyphilitic treatment. Of the 121 patients, 25 became jaundiced during the first six months of treatment as compared to 75 during the second six months of therapy. During the second year hepatitis occurred in 21 patients, the decrease being due largely to termination of treatment as adequate or by reason of transfer or parole during this period.

A parallel between the incidence of postarsphenamine jaundice and catarrhal jaundice has been reported by Stokes, Reudemann and Lemon,[13] by Ruge and by Todd.[14] There have, however, been no epidemics of catarrhal jaundice among the prisoners during the period covered by this study. Neither has catarrhal jaundice been endemic, the incidence among the prisoners during 1941 being 0.1 per cent. During the same period among prisoners receiving bismuth the incidence of hepatitis was 10.3 per cent, or one hundred times greater. There has been no simultaneous increase in the incidence of postarsphenamine jaundice. On the basis of the criteria previously discussed, the incidence of postarsphenamine jaundice for the same period is 1 in 937 injections, or slightly greater than that of 1 in 998 injections reported by the Cooperative Clinical Group.[15]

The number of patients with bismuth hepatitis did not vary greatly from year to year, the smallest being 22 in 1938 and the largest 35 in 1941. Similarly, there was no great monthly variation, the largest number of cases in any one calendar month being 7. Taking the aggregate of the years, 66, or 54.5 per cent, of the cases occurred during the winter months (October to March) while 55, or 45.5 per cent, occurred during the spring and summer (April to September). Similar seasonal increases for postarsphenamine jaundice have been reported by Ruge, by Stokes, Reudemann and

13. Stokes, J. H.; Reudemann, R. J., and Lemon, W. S.: Epidemic Infectious Jaundice and Its Relation to the Therapy of Syphilis, Arch. Int. Med. 56: 521 (Nov.) 1920.

14. Todd, A. T.: Postsalvarsan Jaundice, Lancet 1: 632 (March 26) 1921.

15. Cole, H. N.; Moore, J. E.; O'Leary, P. A.; Stokes, J. H.; Wile, U. J.; Clark, Taliaferro; Parran, Thomas, Jr., and Usilton, Lida J.: Cooperative Clinical Studies in the Treatment of Syphilis-Arsenical Reactions, Ven. Dis. Inform. 14: 173 (Aug.) 1933.

Lemon and by Wile and Sams.[16] Stokes and his associates attributed the increase to the prevalence of infections of the upper respiratory tract during the winter months. While respiratory infections are common among the prisoners during the winter months, the slight increase in the number of patients with bismuth hepatitis during these months would indicate that such infections are at least not a major factor.

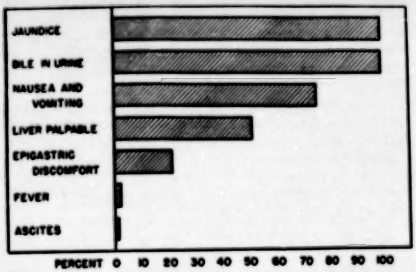

Chart 2.—Symptoms and signs among 121 patients with hepatitis due to bismuth.

Bismuth hepatitis, like postarsphenamine jaundice, is frequently difficult to distinguish from catarrhal jaundice. The difficulties in differentiation are well summarized by Moore. Among the 121 patients with hepatitis due to bismuth, all degrees in the severity of symptoms and the intensity of the jaundice were observed. For the most part, however, the symptoms were not sufficiently severe to require hospitalization, and the prisoners continued their usual duties. Data as to the symptoms and signs available in 51 cases are summarized in chart 2. The symptoms grouped under the term nausea and vomiting varied from anorexia and aversion to food to actual nausea and vomiting.

The duration of jaundice could be determined in 113 cases. In 3 the symptoms and icterus disappeared in less than two weeks while in 34 recovery was complete in from two to four weeks. The jaundice in 39 persisted for from four to six weeks and from six to eight weeks in 29 cases. In all but 8 the jaundice had disappeared by the end of eight weeks, the longest period being twelve weeks in 1 case.

Treatment was subsequently continued in 107 of the 121 cases of bismuth hepatitis. In 9, or 8.4 per cent, there was a recurrence of the jaundice. This occurred during bismuth therapy in 4 and while arsphenamine was being given in another 4. Jaundice recurred with tryparsamide in 1 case.

The frequency with which hepatitis was encountered as a reaction to treatment cannot be attributed solely to the iodobismitol with saligenin. In the experience of others hepatitis due to iodobismitol with saligenin has not been reported.[17] Only 1 instance of hepatitis has been noted following more than 80,000 injections of this drug given in the Syphilis Clinic of the Stanford University Hospitals.

Damage to the liver by alcohol is suggested by Langernon and his co-workers as a predisposing factor in bismuth hepatitis. Using information given by the prisoners, the past record of arrests for drunkenness and the impressions of the prison psychiatrists made at the time of entry, we made an attempt to determine the amount of alcohol used in the past, taking as a control group 200 prisoners receiving antisyphilitic treatment without hepatitis as a reaction. Among those with bismuth hepatitis 18.1 per cent used no alcohol, approximately the same proportion, 22 per cent, as in the control group. Moderate amounts were used by 26.3 per cent of those with hepatitis as compared with 44 per cent among the controls. Of the prisoners with hepatitis, 55.5 per cent used excessive amounts while only 22 per cent of the control group were chronic alcoholic addicts. While the rigidity of the criteria may well be questioned, it would seem that previous hepatic damage due to alcohol may predispose the liver to further injury by bismuth.

The effect of diet in protecting the liver against injury by drugs, particularly the arsphenamines, has been the subject of much controversial discussion. The more recent studies made by Messinger and Hawkins[18] and by Miller, Ross and Whipple[19] indicate that a greater protective effect is afforded by the protein fraction than by either the carbohydrate or the fat. Vitamin B complex, or at least certain fractions of it, may also have, according to recent studies, some effect in protecting the liver from injury. For these reasons an analysis of the diet for a ten day period was made. Since the prisoners are fed in a common mess quantitative measurement of the food taken could not be obtained, and for purposes of calculation the normal intake of between 2,600 and 3,000 calories daily was assumed. The results of the analysis are given in the accompanying table. The minimum standards adopted by the Foods and Nutrition Board of the National Research Council[20] are given for comparison.

The comparison made in the table shows the diet to be fairly adequate. The amount of protein, while not high, is above the minimum requirements. The vitamin B complex, particularly the riboflavin, is, however, somewhat less than the recommended amount.

Comparison of Average Diet Received by Prisoners with Standards Recommended by the Food and Nutrition Board of the National Research Council

	Carbohydrate, Gm.	Protein, Gm.	Fat, Gm.	Calcium, Gm.	Iron, Mg.	Vitamin A, International Units	Thiamine Hydrochloride (B1), Mg.	Ascorbic Acid (C), Mg.	Riboflavin, Mg.
San Quentin	381	90	79	0.75	15	5,729	1.3	61	1.47
Standard	...	70	..	0.8	12	5,000	1.8	75	2.7

Pending further studies on the protective effect of vitamin B complex, the significance of deficiency in relation to treatment jaundice cannot be determined. Changes in the liver have been observed in diets deficient in vitamin B complex. Fatty infiltration of the

16. Wile, U. J., and Sams, W. M.: A Study of Jaundice in Syphilis: Its Relation to Therapy, Am. J. M. Sc. **187**: 297 (March) 1934.

17. Barnett, C. W., and Kulchar, G. V.: Iodobismitol in the Treatment of Syphilis, J. A. M. A. **109**: 1715 (Nov. 20) 1937.

18. Messinger, W. J., and Hawkins, W. B.: Arsphenamine Liver Injury Modified by Diet, Protein and Carbohydrate Protective but Fat Injurious, Am. J. M. Sc. **199**: 216 (Feb.) 1940.

19. Miller, L. L.; Ross, J. F., and Whipple, G. H.: Methionine and Cystine: Specific Protein Factors Preventing Chloroform Liver Injury in Protein-Depleted Dogs, Am. J. M. Sc. **200**: 739 (Dec.) 1940.

20. Committee on Foods and Nutrition, National Research Council; Report of the National Nutrition Conference, Pub. Health. Rep. **56**: 1233 (Nov. 13) 1941.

liver has been reported in animals on a riboflavin deficient diet by Sebrell and Onstott,[21] while Von Glahn and Flinn [22] found that cirrhosis of the liver produced by lead arsenate could be regularly prevented by the addition of yeast to the diet. The studies made by Forbes and his co-workers [23] and by Drill and Hays [24] have given further evidence that vitamin B complex may have some protective effect on the liver. Certain types of toxic hepatitis and cirrhosis, according to György and Goldblatt,[25] may be due to a deficiency of vitamin B complex. The assignment of any major role to vitamin B complex in treatment jaundice, however, must await the results of further study. Similar deficiencies must certainly exist, particularly in clinic practice where treatment jaundice is a relatively infrequent complication.

The precise causation of bismuth hepatitis, like that of postarsphenamine jaundice, is as yet undetermined. In the latter, according to Moore,[26] a number of factors including the diet, damage to the liver by syphilis and the strain of metabolizing arsphenamine are involved. It seems probable that on this background of hepatic damage there is superimposed an infection the exact nature of which is as yet unknown. To this concept Sager [27] subscribes, stressing the frequent association of treatment jaundice with infections of the respiratory and the gastrointestinal tract. The association of postarsphenamine jaundice with epidemics of catarrhal jaundice led Stokes, Reudemann and Lemon to believe that the two were due to the same infection. Müller [28] and Zimmern,[29] however, were unable to show any correlation between the incidence of postarsphenamine and catarrhal jaundice. Sager, after reviewing the literature, concluded that while the two may act in summation or potentiation, the evidence was preponderantly in favor of their separate identity. While the source and nature of the infection is as yet undetermined, it may be significant that the highest incidence of treatment jaundice has been reported from military services where men live in close association, increasing the opportunity for transmission of infection.

The concept of treatment jaundice as a summation effect resulting from the interaction of several or more factors, which independently are insufficient to cause the clinical manifestations of hepatitis (Sager), may well be the explanation for the frequent occurrence of jaundice due to bismuth reported here. It is difficult, however, to evaluate even in a general way the relative importance of the various factors. While damage to the liver by arsphenamine, alcohol and deficiencies in the diet may be contributory, the fact that the clinical manifestations of hepatitis occur during the period that bismuth is being received indicates that the heavy metal is the primary factor.

21. Sebrell, W. H., and Onstott, R. H.: Riboflavin Deficiency in Dogs, Pub. Health Rep. **53**:83 (Jan. 21) 1938.
22. Von Glahn, W. C., and Flinn, F. B.: The Effect of Yeast on the Incidence of Cirrhosis Produced by Lead Arsenate, Am. J. Path. **15**: 771 (Nov.) 1939.
23. Forbes, J. C.; Neale, R. C., and Scherer, J. H.: Liver Preparations Protecting Against Necrosis from Chloroform or Carbon Tetrachloride Administration, J. Pharmacol. & Exper. Therap. **58**: 402 (Dec.) 1936.
24. Drill, V. A., and Hays, W. H.: Hyperthyroidism and Liver Function in Relation to B Vitamins, Proc. Soc. Exper. Biol. & Med. **42**:450 (March) 1941.
25. György, Paul, and Goldblatt, Harry: Hepatic Injury on a Nutritional Basis in Rats, J. Exper. Med. **70**: 185 (Aug.) 1939.
26. Moore, J. E.: The Modern Treatment of Syphilis, pp. 119-120.
27. Sager, R. V.: Factors Responsible for Jaundice in Syphilis, Arch. Int. Med. **57**: 666 (April) 1936.
28. Müller, I.: Zur Statistik der Leberkrankungen im Zeitraum von Januar 1914 bis März 1922, Klin. Wchnschr. **1**:835 (April 22) 1922.
29. Zimmern, F.: Spätikterus nach Salvarsan, Dermat. Wchnschr. **70**:78 (Jan. 31) 1920.

SUMMARY

The occurrence of hepatitis due to bismuth in 121 patients receiving treatment for syphilis has been determined to be 10.3 per cent, with recurrence of the hepatitis on continuation of treatment in 8.4 per cent. The effect of previous arsphenamine therapy as well as the less evident factors of diet, alcoholism and intercurrent infection all predispose the liver to damage from bismuth.

Bismuth hepatitis, like postarsphenamine jaundice, is due to a summation effect resulting from the interaction of several more factors which individually are insufficient to cause the clinical manifestations of hepatitis.

While the importance of predisposing factors cannot be denied, the primary cause would seem to be the bismuth itself.

450 Sutter Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BEERMAN, SHAFFER AND LIVINGOOD, DRS. KAHN AND BECKER AND DRS. KULCHAR AND REYNOLDS

DR. FRANK C. COMBES, New York: My experience with bismarsen has been very sparse in the last few years. Previous to 1932 I used large amounts of it, but I developed an aversion to all preparations containing the sulfonate radical. Until now I have always considered that a proper evaluation of this drug as an antisyphilitic agent had never been determined. What are the basic requirements of a drug offered for the treatment of syphilis? It must be lethal to the invading organism. Bismarsen, although not as active as arsphenamine, has a definite beneficial effect in early syphilis. Second, it must be relatively nontoxic to the host. Serious sequelae to injections of bismarsen are few. Raiziss and Severac determined that the maximum tolerated intravenous dose is twenty times the curative dose in syphilitic rabbits. However, I do not think that the purpose of Dr. Beerman and his co-workers was to offer a universal substitute for arsphenamine, because no arsenical which has been advanced or suggested has the activity of arsphenamine and I regret to hear that one of our largest pharmaceutical manufacturing houses is discontinuing its manufacture. But in bismarsen we have a valuable addition which is applicable to those patients for whom intravenous therapy is untenable or impossible, such as prenatal syphilis, and to those patients who react unfavorably to other arsenicals, to a select group of cardiovascular patients, in early neurosyphilis, in some instances of Wassermann fastness and for the use of those physicians who are unable to perfect themselves in intravenous medication. This latter may seem like a minor requirement, but we are in need of an intramuscular arsphenamine, and I trust that in the next paper to be read that requirement may be answered.

DR. C. J. LUNSFORD, Oakland, Calif.: The findings presented by Drs. Kahn and Becker indicate that, in those cases of syphilis which are least likely to withstand successfully the action of the more toxic drugs, excellent results can be obtained by more conservative methods of treatment. During the last several years in our office we have had patients with late and latent syphilis who were sensitive to arsenic. For some we have used no drug other than bismuth and have observed complete disappearance of cutaneous lesions and a reversal of their positive Wassermann reactions. It therefore did not surprise us to learn of Drs. Kahn and Becker's excellent results obtained by combining little arsenic with much bismuth in the treatment of late latent syphilis. Now comparing the results obtained by the Oakland Health Center in the two to five year group with those of the University of Chicago and the Combined Clinic Group as illustrated in the paper by Drs. Kahn and Becker it is seen that the Oakland Health Center obtained 50 per cent satisfactory results, the University

of Chicago 67.3 per cent satisfactory results and the Combined Clinic Group 46.1 per cent satisfactory results. In the two to five year group the University of Chicago obtained definitely better results than did either the Combined Clinic Group or the Oakland Health Center. As the Oakland Health Center patients received exactly the same amount of arsphenamine and about the same amount of bismuth as did the patients of Drs. Kahn and Becker, the question naturally arises Why the difference in results? It would seem likely that the rest periods given in the treatment by Drs. Kahn and Becker do not account for the favorable results which they obtained, because the Combined Clinic Group studies of late latent syphilis showed that the little difference observed in the results obtained by continuous treatment compared to the interrupted treatment procedure favored the continuous treatment method. Drs. Kahn and Becker state that their patients cooperated in that they received their treatment regularly. The patients treated at the Oakland Health Center are on the whole unreliable, and the majority did not receive regular treatment. Combined Clinic Group studies showed that in the treatment of early syphilis irregular treatment was worse than no treatment at all. Reasoning by analogy, this difference in cooperation could well account for the superiority of Drs. Kahn and Becker's results as compared with those reported by me.

DR. H. C. SAUNDERS, New York: I agree with most of the conclusions of Drs. Kahn and Becker. There is no doubt that bismuth has rightfully replaced mercury to a great degree in the treatment of syphilis. Bismuth alone should not be relied on to cure syphilis in the earlier stages. This practice cannot be too emphatically condemned. As the disease progresses, however, bismuth becomes more and more important and the trivalent arsenicals less and less so. In the later stages of the disease there are many patients whose only medication should be bismuth. This seems to be borne out by the figures in table 4. The groups receiving less than twenty injections of an arsenical show a higher percentage of satisfactory results and, with the exception of the clinical relapses, lower percentages of untoward results than those groups receiving more of the arsenicals. This is also true in the report of the Combined Clinic Group. I agree with them in their choice of arsenicals. In latency we do not need the greater potency of arsphenamine but rather the milder action of neoarsphenamine or mapharsen. There can be no question as to the advisability of treating latent syphilis. In addition to the points made by the authors, the possibilities of serious relapse or death is reduced from 25 to 30 per cent to about 5 per cent by such treatment. In late latency the problem of choice of preparations, of their dosage and of the amount of treatment must be dictated more and more by the individual requirements; i. e., while we can in earlier syphilis have a set routine for practically all patients, in latency a set formula becomes less and less useful and the individual needs more and more important. Of all the preparations listed by the Council, I believe that bismuth subsalicylate is the most valuable, especially if suspended in peanut oil. I do not believe that a greater dosage of bismuth is necessary than will maintain a daily excretion in the urine of from 2 to 4 mg. of elemental bismuth or that it will be productive of better results. I am glad to note that the authors set a minimum of twenty-four doses of an arsenical divided into three courses. This more than fulfils the requirement set forth by the Combined Clinic Group which showed that 72 per cent of all relapses occurred in patients receiving less than twenty injections of an arsenical. In evaluating the previous treatment I believe the authors have been rather optimistic. I should be inclined to place most of those in the first two groups as being very poor. This, however, does not detract from the result obtained but tends rather to enhance its value.

DR. JOHN ERIC DALTON, Indianapolis: The role which bismuth alone may play in this complex problem of therapeutic hepatitis is somewhat debatable. We are all willing to admit that it may be the agent which comes along to produce a break in a hepatic resistance, which has been previously deeply undermined by the syphilitic infection itself, previously administered arsenical therapy, intercurrent infections, alcoholism, dietary deficiencies, and the general wear and tear of life on this organ. Thus it would still seem controversial that bismuth, when administered singly and in doses of proper therapeutic size, can produce severe liver changes when its administration has not been preceded by other factors which have lowered hepatic efficiency. Cole and Sollmann showed that, when severe anatomic changes occur in the liver, the amount of bismuth held by this organ is materially increased, and we can see that under those conditions bismuth could lead to further grave alterations. The 3 cases described by Dowds scarcely come into the realm of a study on therapeutic jaundice, because in all those cases the doses which were employed were far higher than those used in carefully managed treatment. One does not deny that massive doses of the drug can produce severe or fatal liver damage, because this has been amply demonstrated in animal experiments. Further, the case cited from Wollman in which a fatal outcome occurred in a 1 month old infant following a single dose of bismuth is open to question. He records that the mother of this child was treated during her pregnancy, and it is most likely that she received an arsenical which the infant was subjected to transplacentally. Also it seems illogical that a single properly sized intramuscular dose could have produced all the changes which led to death in the short space of three days. Again it seems strange that after an interim bismuth therapy can be resumed without ill effect in many of these cases which have previously shown signs. It is noted that there was a recurrence of the jaundice in 9 cases in this report, but in 5 of those it happened when an arsenical was being administered. When we compare the greater incidence of this manifestation in individuals living in close contact as against its lesser occurrence in clinic practice, we are almost forced to consider some other interplaying factor, which might well be an intercurrent infection. There may be considerable yet unrevealed light in the studies which are in progress dealing with the interaction of diet and the patient's behavior to metals and in particular those experiments which György is doing in relation to the deficiency in a constituent or constituents of the vitamin B complex.

DR. BERNARD APPEL, Lynn, Mass.: My experience with bismarsen in the Boston City Hospital, with about 25,000 syphilitic visits a year, and in a smaller clinic with about 10,000 syphilitic visits a year, at the Lynn Hospital, has gradually led me to rely on bismarsen principally in cases in which the intravenous use of a standard arsphenamine is contraindicated and principally when there are technical difficulties by the administering technician. I should like to differ with Dr. Beerman and his co-workers in their statement about bismarsen in cardiovascular syphilis. When we have a drug like mapharsen, which has been shown to be almost entirely free from nitritoid reaction, which is the most serious one that we can possibly have in these cases, and when we further know that bismarsen is capable of producing nitritoid reaction, we might be justified in thinking that bismarsen should not be the drug of choice in cardiovascular syphilis. As far as other reactions are concerned, I have seen a number of instances in which reactions of one sort or another toward treatment with the standard arsphenamine has been followed later by similar, identical, although somewhat milder reactions when bismarsen was used in that same case. As for the paper of Drs. Kulchar and Reynolds, when we hear a statement which is in sudden conflict with what has been commonly accepted for a long time as a fundamental, the usual reaction is controversial. Such is likely to be our reaction to this paper. The authors have tempered their remarks continually by obviously direct or implied admissions of the controversial aspect of the principal theme. They have presented, however, out of the total of 121 patients, only 4 who became jaundiced during the first course of bismuth in whom previous arsenical therapy can be excluded. If, however, we consider other reports in the literature of cases of jaundice following injections of bismuth only, we are then confronted by a slowing accumulating group of observations from which we may reasonably conclude that intramuscular injections of bismuth, especially the water soluble compounds, may seriously damage the liver. So far, however, all the evidence points to a relatively low incidence of this complication.

The high incidence of nausea, vomiting and epigastric discomfort present in these cases of jaundice point quite definitely to a transient injury to the liver as a cause.

DR. HERMAN BEERMAN, Philadelphia: I have little to say except thanks to Dr. Combes and Dr. Appel and to Dr. Combes particularly because of his considered opinion in analyzing the material which we have presented. Unfortunately the fourteen year observation period of the drug was not commented on. This was the major object in presenting this paper, not the discussion of the merits or demerits of bismarsen. With regard to the use of bismarsen in cardiovascular syphilis, we felt that it was advisable, largely on the recommendation of cardiologists, to use an intramuscular preparation such as bismarsen in preference to an intravenous preparation. There is, however, some evidence to indicate that other drugs usually administered intravenously, mapharsen, for example, may be used intramuscularly. While there are other drugs for cardiovascular syphilis, the route of administration of the preparation is extremely important.

DR. S. WILLIAM BECKER, Chicago: I think, as Dr. Lunsford suggested, that the regularity of treatment as carried out by our patients may have made the difference between our results and the results in the more or less charity clinic. I am sorry that we did not carry out urinary excretion studies. I should like to state too that the combined treatment by means of bismuth and an arsenical is also efficacious in early syphilis. I should like to take exception to a statement made by Dr. Stokes earlier in the morning that we should wait a year before we supply boards of health with standard systems. We have the same situation as the man who has never purchased a radio because he wants to wait until they are perfected. We never attain perfection. We have here the combined systems. Bismuth and an arsenical have given us the maximum clinical and serologic results with a minimum of complications, and this idea has been fortified by experimental studies. Our systems of therapy not only tell the physician how to start treatment but also tell him how to stop treatment, a feature which has been neglected in most systems of therapy. There is a gratifying tendency to combine bismuth with the arsenical in the various systems of treatment now in use elsewhere. In the studies on the five day intensive method for early syphilis some clinicians are now combining bismuth with the arsenical. The combined courses should give us a superior therapeutic index.

DR. GEORGE V. KULCHAR, San Francisco: From the outset I realized that the concept that hepatitis may result from the use of bismuth might be critically discussed, particularly in view of the frequency with which it was encountered among our patients. If one regards hepatitis as a progressive affair with variable degrees of severity ranging from simple toxic hepatitis to acute yellow atrophy, the citation of acute yellow atrophy from the use of bismuth with which Dr. Dalton took exception seems reasonable. His exception is well taken, however, as they are rare and severe injuries as a result of the rapid absorption of large amounts of bismuth and do not represent the chronic hepatitic injury which results from the continued use of bismuth. They are rather similar to the acute yellow atrophy that results occasionally from the use of other drugs.

The Negro as a Surgical Risk.—Surgeons who have had considerable clinical experience with Negroes commend them as excellent surgical risks. They are stoic in their reaction to pain and discomfiture, do not easily go into shock, take anesthesia well, resist infection, and show remarkable powers for recovery. Most colored people live strenuously, a reflection of which is in the many severe injuries they receive either as accidental industrial injuries or as the result of altercations. Some of these injuries are so serious as to merit an almost hopeless prognosis. Yet many times they recover with ease and with remarkably little disablement. The first person to undergo a successful cardiac suture was a Negro, which was as much a tribute to the hardihood of the patient as it was to the skill of the surgeon, who, incidentally, was himself a Negro—the late Dr. Daniel H. Williams.—Lewis, Julian H.: The Biology of the Negro, Chicago, University of Chicago Press, 1942.

MASSIVE HEMORRHAGE INTO BRAIN TUMOR

ITS SIGNIFICANCE AND PROBABLE RELATIONSHIP TO RAPIDLY FATAL TERMINATION AND ANTECEDENT TRAUMA

JOSEPH H. GLOBUS, M.D.
AND
MILTON SAPIRSTEIN, M.D.
NEW YORK

The opinion is often expressed that massive hemorrhage into a brain tumor is responsible for an abrupt change in the intracranial contents resulting in a rapidly fatal termination. It is also postulated, and often claimed, that such massive hemorrhage into a brain tumor may be caused by violence to the head. We are unaware of any satisfactory proof, which is based on a sufficiently representative number of verified cases of brain tumor, that has yet been offered to support these two views. Moreover, the large material of Cushing, which was analyzed by Oldberg,[1] led the latter to conclude that hemorrhage into brain tumor plays an unimportant role in the clinical picture, while elsewhere we [2] have corroborated the observations of Kernohan and Parker [3] that the causative relationship between trauma and brain tumor in general has been overemphasized if it exists at all.

TABLE 1.—*Ninety-Four Cases of Unoperated Brain Tumor in Which the Cause of Death Was Due to Brain Tumor*

Classification	Number of Cases	Sudden Death in	Hemorrhage Into Tumor in	Evidence of Blood in Cerebrospinal Fluid in
Spongioblastic (including spongioneuroblastoma)	24	6	4	6
Transitional glioma	6	0	0	3
Gliomas (including glioneuroma)	11	2	1	0
Medulloblastoma	1	1	0	0
Ventricular tumors, cysts and ependymomas	4	1	0	2
Central neurinoma	2	0	0	1
Schwannoma	1	0	0	0
Pinealoma	1	0	0	0
Craniopharyngioma	1	1	0	0
Pituitary adenoma	3	0	0	2
Meningioma	6	1	0	1
Hemangioma	1	0	1	0
Metastatic carcinoma	32	3	3	6
Cerebellar cyst	1	0	0	0
Total	94	15	9	21

With this in mind, we undertook a survey of a large number of primary and secondary, clinically and anatomically observed brain tumors to study the influence of hemorrhage into a brain tumor on the subsequent anatomic and clinical events and either to establish or to exclude a probable relationship between trauma and hemorrhage into a brain tumor.

THE MATERIAL AND METHODS

The anatomic findings and the clinical histories of 370 cases of brain tumor were available; but only 94 were used for this study (table 1). These were selected

From the Laboratory and the Neurological Service of the Mount Sinai Hospital, New York.

Read before the Section on Nervous and Mental Diseases at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1942.

1. Oldberg, Eric: Hemorrhage into Gliomas, Arch. Neurol. & Psychiat. **36**: 1061 (Nov.) 1933.
2. Globus, J. H.; Zucker, J. M.; Sapirstein, Milton, and Kanzer, M. G.: Brain Tumor and Head Trauma, Tr. Am. Neurol. A. **66**: 165-168, 1940.
3. Parker, H. L., and Kernohan, J. W.: The Relation of Injury to Glioma of the Brain, J. A. M. A. **97**: 535 (Aug. 22) 1931.

because they were not subjected to surgical intervention, and thus confusion which might have arisen from the question as to whether intracranial surgery might have acted as a traumatizing agent was obviated.

In analyzing our material it was necessary to evaluate three variables which may be encountered in the history

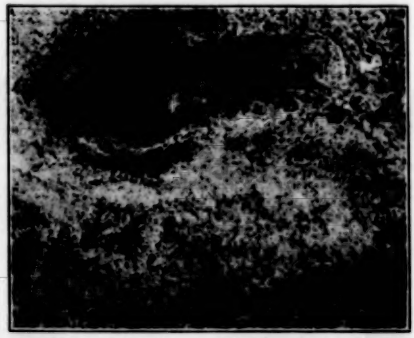

Fig. 1.—A thrombosed blood vessel with an area of softened brain tissue around it.

of a brain tumor: (1) massive and explosive hemorrhage into the tumor, (2) sudden and abrupt change in the clinical picture leading to a rapidly fatal termination and (3) violence to the head occurring at some period in the history of the host of the tumor. The pathologic alterations were at first studied independently of, and without any recourse to, the available clinical information and then correlated with the latter.

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DEFINITIONS

1. *Massive Hemorrhage into Brain Tumor.*—A more rigid definition is to be adopted for the term "hemorrhage into brain tumor" before its significance can be

Fig. 2.—A thickened blood vessel with extravasation around it.

properly evaluated. The experience of those who have studied large brain tumor material reveals the fact that it is the exception rather than the rule for a tumor not to show some seepage of blood from its blood vessels into the surrounding tumor tissue. This phenomenon is readily understood when it is recognized that in the majority of instances of brain tumor the vessels are numerous and that many of them show alterations which frequently result in their complete closure. These changes in turn result in necrosis of the tumor tissue about such blood vessels (fig. 1). Both circumstances, the alterations in the vessel wall and the necrotic changes in the neighboring tumor tissue, invite migration of blood elements by diapedesis and their dissemination throughout the surrounding tissue (fig. 2). Such seepage of blood, as well as decided vascularity of the tumor (fig. 3), often gives rise to gross discoloration of the tumor tissue suggesting hemorrhage into the neoplasm (fig. 4). Such passage of blood elements into surrounding tissue which may be designated as extravasation in contradistinction to hemorrhage, a more formidable and active escape of blood from blood vessels, is a common occurrence. While this form of seepage may contribute toward the sum total of the clinical manifestations, it need not be regarded as constituting a critical and certainly does not in addition serve as an abrupt event in the anatomic behavior of the tumor or the clinical course.

TABLE 2.—*Nine Cases of Hemorrhage into Brain Tumor*

Case	Diagnosis	Site	Type of Death	Blood in Cerebrospinal Fluid	Trauma
1	Glioma	Right temporal	B	No	4 plus; 6 yrs. before symptoms of tumor
2	Spongioblastoma	Bifrontal	C	No	No
3	Spongioblastoma	Left temporal	C	No	No
4	Metastatic Wilms'	Bilateral occipital	B	No	2 plus; at onset, 15 days before death
5	Hemangioma	Left prefrontal	C	No	No
6	Neurospongioblastoma	Left frontoparietal	C	No	No
7	Metastatic thyroid	Right occipital	C	Yes	No
8	Neurospongioblastoma	Right temporal	A	No	No
9	Metastatic lung	Left frontoparietal	C	No	No

A. Sudden death in instances in which symptoms of brain tumor developed without significant prodromal symptoms.
B. Sudden death in cases in which brain tumor was diagnosed.
C. Gradual decline leading to death in cases diagnosed as brain tumor.

There are, however, occasional instances in which there is an explosive and massive escape of blood into the tumor or the adjacent tissue. True hemorrhage is an extensive phenomenon, with the blood accumulating in a solid mass beyond the confines of the ruptured blood channels (figs. 5, 6 and 7). The voluminous character and the explosive nature of such hemorrhage is believed to be capable of causing an abrupt and commonly a fatal change in the clinical course. It is this type of hemorrhage that drew our particular attention.

Peculiarly enough, and against the commonly accepted views, we found such hemorrhage into a tumor in only 9 cases out of the total of 94 (table 2). Of these 9 cases, 4 were of the malignant neuroectodermal variety, designated as spongioblastoma or spongioneuroblastoma; 1 was a less malignant type of glioma, the so-called transitional glioma; 1 was a hemangioma, and 3 were (secondary) metastatic tumors.

In 7 instances there were linear extravasations of blood into the brain stem distal to the site of the tumor. In only 1 case were linear hemorrhages found in the brain stem, accompanying massive hemorrhage into a brain tumor.

2. *Sudden and Abrupt Change in the Clinical Picture.*—Since the immediate clinical evidence of the effect of trauma or the changes which are assumedly provoked by hemorrhage into the tumor can be gaged only by objective neuropsychiatric findings, the need for criteria

Fig. 3.—An extremely vascular area in the brain tumor shown in figure 4.

as to what constitutes a sudden alteration in the clinical picture is quite obvious. Accordingly two clinical syndromes should be considered. One characterizes a patient who, at first apparently well with or without minor complaints of a neurologic character, suddenly collapses and develops stupor which deepens progressively and terminates in less than twenty-four hours

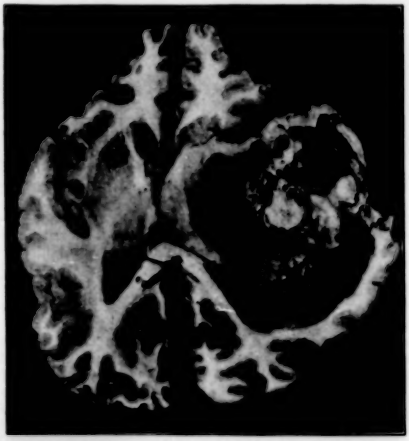

Fig. 4.—An extremely vascular tumor of the brain (spongioblastoma multiforme).

in death. There were 15 such cases. A second clinical syndrome typifies a more commonly encountered situation in which the patient who has been under investigation for some time with a brain tumor strongly suspected or definitely established suddenly passes into stupor, declines rapidly and without regaining consciousness dies within a few hours (at the most forty-eight hours). Twenty-six of our patients died in this fashion. In a third category, the largest in our material, there are 53 cases in which the clinical course is marked by gradual decline terminating fatally.

3. *Violence to the Head in Verified Cases of Brain Tumors.*—In a previous communication we [2] have classified head trauma in accordance with the severity of the violence and have defined several categories. Thus, there are instances in which the history records slight violence to the head without immediate untoward manifestations, such as clouding or loss of consciousness, headache or any other neurologic sign and symptom. Such cases are designated 1 plus or 2 plus. In a second group there are cases, designated 3 plus, in which the injury was followed by a brief period of unconsciousness without subsequent clinical manifestations including headache. In still another group there are cases, designated 4 plus, in which the trauma was of such severity

Fig. 5—A massive hemorrhage into a brain tumor.

that it was accompanied by a relatively long period of unconsciousness (one-half hour or more) and followed by recurrent headache. In the material of the present investigation there was a total of 16 cases in which there was a history of head trauma. Four of these belong in the group of 3 plus and 4 plus. In only 1 of these cases did the trauma occur shortly before the onset of the symptoms; the tumor was a spongioneuroblastoma; in another case the trauma was said to have occurred two years before the onset of signs of neurologic disturbance; in a third case the trauma was recorded as having occurred six years prior to the development of neurologic complaints, and in the fourth case the trauma occurred one month after the onset of signs of brain tumor.

SUMMARY OF OBSERVATIONS

1. *Sudden Death in Relation to Hemorrhage into Brain Tumor.*—Fifteen out of our series of 94 patients died suddenly and unexpectedly (table 3). Of these, only 1 disclosed a hemorrhage into the tumor. This

patient also had a linear extravasation into the brain stem. One other patient who died suddenly had a similar brain stem lesion without hemorrhage into the tumor. Of the remaining 79 patients of our series who declined more gradually, 8 had hemorrhage into the tumor with additional extravasations into the brain stem in 5 cases. It would seem that hemorrhage into a brain tumor is not a determining factor in the production of sudden death.

2. *Sudden Death in Its Relation to Head Trauma in Patients with Brain Tumor.*—None of the patients who died suddenly had suffered any trauma to the head.

TABLE 3.—*Fifteen Cases of Brain Tumor with Sudden Death*

Case	Diagnosis	Site	Hemorrhage into Tumor	Blood in Cerebrospinal Fluid After Onset of Acute Symptoms	Trauma	Duration of Terminal Clinical Phase	Vascular Lesion in Brain Stem
1	Medulloblastoma	4th ventricle	No	No	No	15 min.	No
2	Spongioneuroblastoma	3d ventricle	No	No	No	45 min.	No
3	Glioma	Left hemisphere	No	No	No	30 min.	No
4	Metastatic	Pons and 4th ventricle	No	Yes	No	5 hrs.	Yes
5	Metastatic	Right pontofacial angle	No	No (before onset)	No	5 min.	No
6	Spongioblastoma multiforme	Right temporal	No	No	No	24 hrs.	No
7	Spongioblastoma multiforme	Interfrontal	No	No (before onset)	No	1 hr.	No
8	Spongioblastoma multiforme	Right hemispheric	No	Yes	No	12 hrs.	No
9	Meningioma	Left temporoparietal	No	No	No	24 hrs.	No
10	Ependymoma	Right lateral ventricle	No	Xanthochromic fluid	No	24 hrs.	No
11	Metastatic	Right cerebellar	No	No (before onset)	No	30 min.	No
12	Craniopharyngioma	3d ventricle	No	No (before onset)	No	10 min.	No
13	Neuroglioma	Left frontoparietotemporal	No	No	No	45 min.	No
14	Spongioneuroblastoma	Right temporal	Yes	No (before onset)	No	10 min.	Yes
15	Spongioneuroblastoma	Left thalamus and midbrain	No	No	No	2 hrs.	No

Sixteen patients gave a history of some form of head trauma but none of these died suddenly. In 4 cases the trauma was severe enough to cause loss of consciousness, but in only 2 did the injury occur during the course of the brain tumor.

3. *Sudden Death in Instances of Brain Tumor with Evidence of Bleeding Found in the Cerebrospinal Fluid.*—Ten patients who died suddenly had been subjected to lumbar puncture. Three showed some evidence of bleeding (red blood corpuscles in the cerebrospinal fluid or xanthochromic fluid). Of those (79 patients) who died less abruptly, 59 had been subjected to this procedure and 18 showed evidence of blood in the cerebrospinal fluid. It cannot be said, therefore, that blood seepage into the cerebrospinal fluid is associated with sudden death.

4. *Sudden Death in Relation to the Histologic Type of Brain Tumor.*—No specific type of tumor showed a statistically higher percentage of sudden death. Fifteen such deaths were distributed among 7 divergent forms of tumor (table 1).

Fig. 6.—Hemorrhagic area under high magnification.

5. *Sudden Death in Relation to the Site of Brain Tumor.*—Of the 15 patients who died suddenly, 7 had involvement of the third ventricle and infratentorial regions. In 8 involvement was restricted to the cerebral hemispheres, with varying localization (table 2).

6. *Hemorrhage into Brain Tumor in Its Relation to Head Trauma.*—While 9 patients had had hemorrhage into the tumor and 16 patients gave a history of head trauma, in only 2 instances was there some association between these two occurrences. But in 1 case the injury occurred six years before death and cannot be implicated as an etiologic factor, while in the other a mild trauma (2 plus) occurred at the onset of symptoms of brain tumor fifteen days before death, in a case of bilateral occipital lobe metastases from a Wilms tumor.

Fig. 7.—Microscopic appearance of massive hemorrhage into a brain tumor showing sharp line of demarcation from the relatively preserved tissue.

Death in this case was not sudden. Among the 7 patients with linear extravasations of blood in the brain stem there was no history of trauma.

7. *Hemorrhage into Brain Tumor in Its Relation to the Histologic Type of Tumor.*—Of 9 cases of hemorrhage, 4 occurred in malignant primary neuroectodermal tumors, 3 in metastatic carcinomas and 2 were in benign tumors (glioma, hemangioma) (table 2).

8. *Trauma in Instances of Brain Tumor in Its Relation to Blood in the Cerebrospinal Fluid.*—Lumbar punctures were performed on 14 patients with brain tumor who gave a history of head trauma. In 5 of these cases the trauma occurred during the clinical course of the brain tumor, and in only 2 of these 5 cases was there loss of consciousness due to the head trauma. Xanthochromic cerebrospinal fluid was found in only 1 instance, in which the trauma had been mild (without loss of consciousness), in a patient whose decline was gradual from a metastatic tumor.

9. *Type of Brain Tumor in Its Relation to the Presence of Blood in the Cerebrospinal Fluid.*—In 21 of the 94 patients some evidence of bleeding was found in the cerebrospinal fluid. This occurred in 6 out of 24 patients with spongioblastomas, 3 out of 6 with transitional gliomas, 6 out of 32 with metastatic tumors, 2 out of 4 with ventricular tumors, 2 out of 3 with pituitary tumors, 1 out of 2 with central neurinomas and 1 out of 6 with meningiomas.

10. *Hemorrhage into Brain Tumor in Relation to Blood in the Cerebrospinal Fluid.*—Out of 9 patients who had hemorrhage into tumors, 7 had received lumbar punctures. In only 1 case was the cerebrospinal fluid xanthochromic. This was in a case of metastatic carcinoma (primary in the thyroid) in the right occipital region, and 1 presenting no history of trauma, and in which decline terminating in death was gradual.

CONCLUSIONS

1. Sudden death in the course of brain tumor is rarely associated with hemorrhage into the tumor or trauma to the head.

2. Our material indicates that trauma to the head plays no part in the production of hemorrhage into a tumor.

960 Park Avenue—477 First Avenue.

ABSTRACT OF DISCUSSION

Dr. Paul C. Bucy, Chicago: Drs. Globus and Saperstein have given a beautiful demonstration of some of those vascular alterations which are common with these malignant gliomas of the brain, and my experience agrees entirely with theirs. Although one might anticipate that hemorrhage would be a common occurrence in these cases, or from the clinical manifestations might make a diagnosis of intracerebral hemorrhage, this is not the case when the brain is examined at autopsy. I should like to ask the authors whether or not they feel as I do, that in many of these instances the sudden turn of events, whether it is sudden death, a sudden and severe aggravation of symptoms or possibly the sudden appearance of symptoms when none were present before, is actually due to thrombosis of vessels, either in the tumor or, in many instances, in the arteries of the brain which pass either through the tumor or in close relationship to it? Many times, as Dr. Globus and his associate have pointed out repeatedly in the past, patients who apparently are perfectly well suddenly develop evidence of intracranial disease, often with a hemiplegia or other neurologic disturbance which leads at the time to the diagnosis of a cerebral vascular accident or thrombosis as the condition responsible for the symptoms, yet subsequent examination discloses that a brain tumor, often a malignant glioma, was the fundamental disease.

Dr. Joseph H. Globus, New York: I agree with Dr. Bucy, at least in his interpretation of what takes place in the brain when a new set of symptoms appear in the course of a brain tumor. I agree with him that it is usually due to an occlusion of a blood vessel, either by external pressure from an adjacent tumor tissue or by some inherent changes within the vessel itself, and therefore a new area of dysfunction is set up as the result of softening of the brain in the area of the occluded blood vessel. This may sometimes occur even in benign tumors. Meningioma may often pass through an area and in a similar fashion occlude a blood vessel and give rise to a new set of symptoms. I do, however, maintain that hemorrhage is not a common feature resulting in this change of clinical picture. It is more likely, as Dr. Bucy has said, due to thrombosis.

SOME REFINEMENTS IN RECONSTRUCTIVE SURGERY OF THE FACE

FERRIS SMITH, M.D.
GRAND RAPIDS, MICH.

Organized medicine and surgery is confronted now with its particular responsibilities in another great war. It will make the most constructive contribution to this vast destructive cataclysm.

The government has a solemn responsibility to the soldier. It is morally obligated to return him to civil life, if he returns at all, in a condition as good as or better than when he was called from his peacetime environment. He must be returned, if possible, in a condition which will permit him to take his place in society without prejudice and to compete without handicap in the most strenuous economic struggle of all history.

The National Research Council, at the request of the surgeon generals of the Army and Navy, has compiled directives for the guidance of the military and naval surgeon which contain the best in the literature and practice.

This in some respects is an advance over previous preparation. It is particularly true of the preparation for reconstructive surgery. Those responsible for training and medical intelligence in the several armies engaged in the last war failed to collect, review and correlate the isolated but rather complete literature.

This resulted in a reconception of methods, trial and error and many bad repairs before standards were established. Much good resulted from this necessity—this experience—but none of the errors should be repeated.

The plastic surgical experience of the last war was a great contribution and a stimulus to better reconstruction. It crystallized and standardized numerous procedures. It contributed several important new methods which revolutionized plastic procedure and increased greatly the possibility and variety of useful repair. Among these was the "tubing" of the pedicle of a flap to reduce the possibilities of infection and to permit the safe transference of tissue from a distance.

The influence of the tubed pedicle on the development of reconstructive surgery during the past twenty

Owing to lack of space, this article has been abbreviated for publication in The Journal by the omission of figure 11. The complete article appears in the author's reprints.

years has been profound. This, and the availability of rotated flaps of forehead skin for repair of the nose, eyelid or cheek and the use of free skin grafts has largely dominated the conception and practice of facial reconstruction.

This has been true particularly since the popularization of "thick, split skin grafts" by Blair and the more recent contribution by Padgett of a mechanical means of obtaining them.

The results are more functional than cosmetic, except in certain rhinoplasties. These are "procedures of necessity" rather than the "procedures of choice," which their universal use today would seem to indicate.

This general trend of thought and procedure is unilateral thought in respect to the dual responsibility of the surgeon—i. e. to restore to normal, or as near to normal as possible, both function and appearance.

The thinking must become bilateral if the surgeon is to discharge his obligation to the civilian and the soldier. The objective must include restoration of both function and appearance. The latter precludes any plan of repair which adds a single unnecessary scar or foreign tissue to any visible portion of the body. The pendulum should swing for the present to the other side of the surgeon's responsibility. The art and finesse of reconstructive surgery should receive more consideration. His major thought in planning and execution should be directed toward a better, more acceptable final appearance. He should realize that the end results of pedicled flaps, rotated forehead flaps and free skin grafts are such that they should never be considered procedures of choice for facial repair even though they must be employed frequently as procedures of immediate necessity. When this is the only procedure available, the planning should contemplate the ultimate replacement of the transplanted skin, with normal skin from the vicinity whenever possible. I have never seen a transplanted skin flap that matched and blended with its surroundings. It becomes the most noticeable and prominent feature of the face even under the best of circumstances. It is frequently pigmented or has a glazed, grayish white cast and is necessarily framed in a scar of varying dimension. Utilization of the skin of the forehead results in a disability which can never be corrected.

Fig. 1.—Unhealed traumatic loss of the nasal columella, tip and mesial portions of both alae (left). Tubed pedicle, formed from a rectangular flap removed from the neck, for transference of hairless retra-aural skin to the nasal defect. Relaxation sutures and bottoms (middle). Final results (right): Note the extent of the repair, which is practically identical with the healed lesion in figure 2. (Courtesy of Dr. Claire Straith, Am. J. Surg. 42: 226 [Feb.] 1939.)

Two important and essential principles of repair were ignored or given scant attention during the last war and have received little more consideration since, except in isolated quarters. I refer to the Z plastic procedure and multiple excision. The former was first described by Denonvilliers[1] in 1856 and the latter by Morestin[2] in 1915. Z plastic has been discussed in the literature occasionally since as a method of correcting scar contractures. It has had wide employment in this connection, but numerous other possibilities of its usefulness, both alone and in combination with other principles, appear to be unappreciated.

Davis and Kitlowski,[3] in an article published in 1939 dealing with the usefulness of Z plastics for the correction of scar contractures, state "We find that there are many who do not understand the procedure at all, or realize its usefulness."

"Multiple excision" is the term utilized by Morestin to describe a method of correcting a surface deformity by repeated partial removal and the replacement of the excised portion with normal tissue from the border of the defect. The extent of each removal and replacement is determined by the amount of skin and subcutaneous tissue which can be shifted into the area at each procedure. Repeated procedures of this sort at proper intervals are possible because the skin subsequently returns to its normal tension and elasticity. It is a most important and useful procedure alone or employed in conjunction with other methods of repair.

The employment of the principles of Z plastic, multiple excision and interpolated flaps from the vicinity of the defect should have first consideration in the planning of a correction whenever the surgeon can choose his procedure. The methods in common practice today, as evidenced in the current literature and observations in various centers, should be procedures of necessity only. They should be employed with the intention of removing ultimately the transplanted skin covering whenever possible.

I am able to contrast typical examples of the current conception of repair, as recorded in recent journals and observed among the patients of my contemporaries, with the results obtained by utilization of Z plastics, multiple excisions and interpolated flaps from the neighborhood and combinations of these methods through the permission of authors, publishers and colleagues to use their material. The cases here cited are examples of

1. Denonvilliers: Blépharoplastie, Bull. Soc. de chir. de Paris **7**: 243, 1856-1857.

2. Morestin, H.: Bull. et mém. Soc. de chirurgiens de Paris **41**: 1233 (June 16) 1915.

3. Davis, J. S., and Kitlowski, E. A.: The Theory and Practical Use of Z Incision for the Relief of Scar Contractures, Ann. Surg. **109**: 1001 (June) 1939.

the excellent technical accomplishments of master surgeons. They represent the types of repair that fill the files of every good plastic surgeon.

REPAIR OF THE NOSE

The loss pictured in figure 1 includes the nasal tip, small mesial portions of each ala and the columella. The tissue requirement for reconstruction is an epithelial lining and hairless covering skin which will blend with the nose in color and texture. The skin should be of such consistency or carry with it sufficient subcutaneous fat to restore contour.

This tissue may be obtained from a distance and transferred on a tubed pedicle either directly or on a

Fig. 2.—Healed traumatic loss of the nasal columella, tip and mesial portions of both alae (*A*). Incised, grafted and delayed flap to furnish lining and surface skin for the repair (*B*). Final appearance after removal of grafted skin by multiple excision (*C* and *D*). Compare figure 1. (Manual of Standard Practice of Plastic and Maxillofacial Surgery, Philadelphia, W. B. Saunders Company, 1942.)

"carrier," or it may be obtained locally (nose) and supplemented by a free graft of skin which will match as closely as the transferred flap.

The surgeon in this instance chose the hairless skin over the mastoid area. He constructed a tubed pedicle to carry this skin to the nose and maintain its nourishment until it acquired an adequate blood supply from the borders of the defect. The denuded area behind the ear was grafted with skin which will not blend with its surroundings. The tube was scrapped after serving its purpose. The technical accomplishment of these procedures is excellent and the result obtained is apparently very satisfactory. It is an example of a universal method—a type of planning.

There is an unnecessary long suture line and relaxation stitch scars in visible portions of the neck and a graft behind the ear. Two cosmetic disabilities have been created in correcting a third.

Fig. 3.—Atrophy of the skin. Ectropion from infraorbital scar contraction (radiated nevus) (left). Final appearance after repair with an inframammary tubed pedicle transferred on the hand as a "carrier." Note the excellent patch. Color contrasts are not visible (right). Compare figures 8 and 10. (Wilmoth, C. L.: The Tubed Pedicle Graft in Facial Reconstruction, Am. J. Surg. 53: 300 [Aug.] 1941.)

The case pictured in figure 2 presents a similar loss with the same requirement. The planning in this instance was based on a desire to avoid any cosmetic disabilities distant from the local loss and to obtain, at the same time, a pleasing reconstruction. This was accomplished by a combination of a grafted, rotated flap from the border of the defect, a free graft on the denuded nasal dorsum and subsequent removal of this graft by multiple excision. No added scars were created about the face and neck.

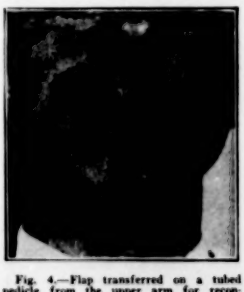

Fig. 4.—Flap transferred on a tubed pedicle from the upper arm for reconstruction of the mouth and cheek. Fourth degree burn in infancy. Appearance eighteen years after repair. The patch is the most arresting feature of the face.

The tip of the nose may be restored in a similar manner. Sufficient skin from the dorsum is rolled downward to provide contour and substance and the defect of the dorsum corrected with a free skin graft taken from behind the ear. The skin defect on the ear is approximated and leaves an invisible scar. The graft on the nasal dorsum may blend with its surroundings satisfactorily, and, if it does not, it is removed by multiple excision.

The restoration of the columella alone should not be accomplished by rotating flaps from the lip or surrounding cheeks. Two methods, other than the one demon-

strated in figure 2, which do not result in added visible deformities are available.

One of these methods provides the required tissue by grafting a flap on the posterior surface of the upper lip and transferring it to the nasal tip as a tube, and the other by constructing a pencil tube along the upper surface of the clavicle and transplanting a portion of this. The scar running across the base of the neck renders this method unsuitable for a female casualty.

The ala may be reconstructed also without added scars about the face and neck. This may be accomplished by utilizing a delayed, reflected, hinged flap from the lateral surface of the nose above the loss to provide a lining and the rolled margin of the nostril. The total resulting surface defect is covered with a full thickness graft from behind the ear. This transplant does not match the surrounding nasal skin perfectly but rather approximately. It is as good as skin from the forehead. Its use avoids added visible scar and confines the cosmetic disability, such as exists, to the locality of the loss.

Fig. 5.—Second and third degree burn scar of the face and neck; scar contracture. See figure 6.

A method described by Kazanjian [4] produces in many instances an even better cosmetic result. He outlines the ala by an incision through the skin at a proper level above the margin of the defect, separates the lining from the nasal process, divides it high in the nose and draws the alar margin down to the proper level. The resulting defect in the surface skin is covered with a full thickness graft from the back of the ear.

REPAIR OF THE FACE

It is particularly desirable that lesions of the cheeks be repaired with normal skin from the borders whenever possible. The surgeon should adopt, invariably, a plan to accomplish this whenever he is permitted to choose the procedure. No transplanted skin, either full thickness or a split portion, blends with its surroundings sufficiently to prevent the repaired area from becoming a definite cosmetic disability—the most noticeable feature of the face. This is true not only of the ideal examples of such results but distressingly so in many ordinary instances. It is possible for the female patient to mask such defects with various types of "makeup," but this is hardly desirable for a man in any capacity.

Fig. 6.—Final appearance of patient shown in figure 5 after the employment of double tubed pedicle abdominal flaps transferred on the hand and arm as a "carrier" (right). An excellent repair employing the "procedure of necessity." (Figures 5 and 6, courtesy of Dr. Gustave Aufricht.)

Fig. 7.—A woman aged 27 after replacement of a hemangioma of the cheek, lower eyelid and upper lip. The lesion on the cheek and upper lip was replaced at the age of 16 with a full thickness skin graft. A thick Thiersch graft was employed for the lid. The color contrasts do not appear adequately. Compare figures 9 and 11. (Padgett, E. C.: THE JOURNAL, Jan. 2, 1932, p. 18.)

4. Kazanjian, V. H.: Plastic Repair of Deformities About the Lower Part of the Nose, Tr. Am. Acad. Ophth., 1937.

I am fortunate in having the permission of my colleagues, who are master surgeons, to use their contemporary material to illustrate this contention.

The case illustrated in figure 3 is an atrophic deformity with ectropion of a lid resulting from the pull of contracted scar. The surgeon had a choice of procedure. He elected to excise the deformity and repair the defect with a tubed inframammary flap transferred on the hand as a carrier. The technical accomplishment is excellent. The cosmetic result is a patch representing patient to blush in this patch. It approximates but does not blend with the surrounding skin. It is the most noticeable feature of the face. It has served its purpose long since and should be removed by multiple excision to bring normal skin into this area.

Figures 5 and 6 feature a case in which the introduction of new skin from a distance was a "procedure of necessity." The surgeon had no opportunity to utilize bordering skin in this repair. He has planned and accomplished skilfully one of the best cosmetic results

Fig. 8.—Pigmented hair nevus (left). The lesion in the temporal region is replaced by a full thickness skin graft. The lesion on the cheek was partially removed by multiple excision and finally replaced with a split skin graft. Color contrasts do not appear. The graft remains the most arresting feature of the face (middle and right). Compare figures 9 and 10. (Courtesy of Dr. Warren Davis.)

Fig. 9.—A pigmented vascular nevus presenting patches of skin atrophy and an infraorbital sarcoma as the result of roentgen irradiation and treatment with radium (left). Appearance after excision of the sarcoma, three excisions of the pigmented lesion and a Z plastic to introduce normal skin infraorbitally without producing an ectropion (middle). Appearance three months after completion of repair (right). Compare figures 3, 7 and 8.

this cheek area. It will always remain the most noticeable feature of the face, despite the fact that it is a perfect surgical repair. (Compare figures 8 and 10.)

Figure 4 pictures an old repair (1924) of a microstoma resulting from contraction of the scar from a fourth degree burn. The skin flap was transferred on a tubed pedicle from the arm. It is one of the best in my personal experience. Its individual color is excellent. The vasomotor control is sufficient to permit the from this procedure that I have seen. The contrast of these perfect flaps with the surrounding normal skin serves to emphasize my purpose in this discussion.

Figure 7 depicts partially the result of a free full thickness graft (see figure 9 also). It is impossible to show the color contrast that evidently exists.

The operator, Dr. Padgett, states that this graft has "some brown pigmentation" but that the patient "on the average looked pretty good. I agree that a skin

graft does not compare with the surrounding tissue. Sometimes there is some pigmentation but, ordinarily, ours are a little whiter in color than the normal skin." This patch, excellent as it is, is the most noticeable feature of the face.

The large pigmented hairy nevus pictured in figure 8 was removed and the area repaired by a combination of methods. The portion occupying the left temporal region was replaced by a full thickness graft from the abdomen, which the operator, Dr. Warren Davis, states "retains a lighter shade than the remainder of the normal skin." Several excisions within the nevus on the cheek and replacement of the remainder with a split skin graft (0.017 inch) from the back completed the repair.

The use of grafted skin on the temporal region was a "procedure of necessity" while the employment of a graft on the cheek was not. A continuation of the "multiple excisions" combined with a Z plastic to change the line of traction on the lower lid would suffice to replace the nevus with normal bordering skin.

by a Z plastic to introduce normal skin from the neck into the cheek and subsequent multiple excisions.

The patient seen in figure 11 presents a loss of the major portion of the left half of the upper lip, decided atrophy and pigmentation of the soft tissues of the infraorbital area of the face and lateral half of the nose and ectropion of the left lower lid. This resulted from early treatment of a nevus with radium and roentgen rays.

The surgeon had a "choice of procedure" in repairing each of the several defects. The lip has been restored by utilizing rotated flaps of the skin and subcutaneous tissue from the border of the defect without any damage to the muscles of expression. This procedure is sufficient to construct good lips with normal skin covering in all cases in which the bordering tissue is not destroyed or is so badly damaged by scar as to be useless (compare figures 12 and 13). The atrophied, pigmented skin of the face was replaced by normal skin as the result of multiple excisions and Z plastics. The eyelid was repaired by releasing the margin of the lid, creat-

Fig. 10.—Scar from a third degree burn; destruction of the nasal skin covering and the left ala; hypertrophied scar and keloid (left). The nose has been covered with whole thickness skin from the mesial surfaces of the ears. A Z plastic has placed normal skin in position for multiple excisions of the hypertrophied scar on the cheek (middle). Appearance as the reconstruction nears completion. The Z plastic for removal of the scar on the lip is incomplete (right).

This result affords the opportunity of comparing the cosmetic value of full thickness and split portions of skin on the same patient. The procedure, despite its skilful execution, replaces a decided cosmetic blemish with another of less degree which remains a definite disability (compare figures 9 and 11).

The patient featured in figure 9 presents atrophic patches of the skin of the cheek and an infraorbital sarcoma as the result of repeated roentgen irradiation of a pigmented vascular nevus. The surgeon had a "choice of procedure" in this instance. A procedure consisting of multiple excision and the use of Z plastics to determine lines of traction was elected. The cosmetic disability consists of a fine line scar in front of the ear and line scars in the nasolabial groove and infraorbital region. The face is covered with normal skin.

The patient pictured in figure 10 presents a third degree burn scar covering the entire nose and areas of hypertrophied scar and keloid in the cheek. The nose has been recovered with full thickness skin taken from the back of both ears. The gross scar and keloid on the cheek and about the mouth has been removed

ing adhesions between the two lids and grafting the resulting defect with skin removed from the upper lid (compare figures 3, 7 and 9).

The patient shown in figures 12 and 13 presents a loss of the mental segment of the mandible, the floor of the mouth, a portion of the left upper lip, the left half of the lower lip and a small portion of the adjacent cheek as the result of a gunshot.

The plan of repair admits "choice of procedure." The surgeon chose to bring in tissue from a distance on a tubed pedicle. He has not only introduced skin into the face which will not match its surroundings but has created a large scar on the neck and chest. The defect could have been repaired with normal skin from its margins and the scars confined to its borders. This is an excellent example of the generally accepted type of planning and procedure (compare figure 11).

SUMMARY

1. The evolution of and the universal modern practice in facial repair has been profoundly influenced by the popularization of tubed pedicle flaps, free grafts and rotated flaps from the forehead.

2. Reconstructions utilizing these methods are procedures of necessity and not procedures of choice.

3. The cosmetic result of such repairs merits more consideration.

4. A better understanding of the varied uses of Z plastics, the employment of the principle of multiple

Fig. 12.—Gunshot wound. Loss of the mental segment of the mandible, the floor of the mouth, a portion of the left upper lip, the left half of the lower lip and a small portion of the adjacent cheek. Prosthetic piece in the mandible; a skin pedicle tubed on the neck and chest; large scar on the neck and chest.

Fig. 13.—The floor of the mouth of the patient shown in figure 12 was repaired with the skin pedicle. Stump of the tubed pedicle and a large scar on the neck and chest (right). Compare figure 11. (Figures 12 and 13 courtesy of Drs. John Kemper and Reed Dingman.)

excision and the use of flaps of normal tissue from the vicinity of the deformity will improve greatly the end results.

5. The plastic surgeon in this war has a solemn obligation to the soldier as well as to the casualty victim in civil life which can be discharged only by careful consideration of the art and finesse of the practice.

Wealthy Street at Plymouth Road.

ACUTE ENCEPHALITIS

MILD EPIDEMIC OBSERVED AT STATION HOSPITAL, FORT SAM HOUSTON, TEXAS

JOHN C. WOODLAND, M.D.
Colonel, M. C., U. S. Army
AND
EMMETT M. SMITH, M.D.
Major, M. C., U. S. Army
FORT SAM HOUSTON, TEXAS

Thirteen cases of acute, epidemic encephalitis which have occurred in soldiers at the Station Hospital, Fort Sam Houston, Texas, seem to substantiate the suspicion that this disease may exist clinically but defy positive laboratory recognition. Case 4 (tables 1 and 2) was proved by laboratory investigation to be due to the western equine strain of virus, but clinically and symptomatically the patient's disease differed in no way from the others observed in this epidemic.

At times we have been confronted, especially during the summer months, with a problem of accurately diagnosing obscure acute febrile conditions, and the summer of 1941 proved to be no exception. In late July and early August, 13 soldiers were admitted to the contagious disease section of our hospital suffering from what proved clinically to be a definite and similar disease entity. The outstanding symptoms and clinical conditions noted in these cases were initial chill, fever, severe headache, rigidity of the neck, backache, vertigo, mental confusion, disorientation and some nausea and vomiting. In 5 of these cases there was present a typical saddle back fever curve, which is often observed in virus diseases. Bradycardia was noted in 8 of the 13 cases.

White blood cell counts ranged from normal to a moderate leukocytosis, except in 1 instance, in which a definite leukopenia was found. Determination of the sedimentation rate in 11 of the 13 cases showed 7 definitely increased at one hour. Insomnia was rather conspicuous in 2 cases. Backache and joint pains were so severe at times that dengue fever was considered as a possible diagnosis. Neurologic findings varied from time to time. Nine patients had increased deep reflexes.

One patient required repeated catheterization. Ten of the 13 manifested some nervous disturbance. The Kernig sign was positive in 3 cases only. One patient complained of diplopia and 1 of photophobia. Ankle clonus was positive in 1; this patient also manifested coarse tremors of the fingers, hands and tongue. Sixty-three spinal fluid examinations made in these cases revealed rather constant and characteristic findings, namely increased cell count, in the neighborhood of 200 to 300 cells; a differential count showing predominantly lymphocytic type cells; total proteins ranging from 40 mg. to 124 mg. per hundred cubic centimeters; positive globulin found in 7. The spinal fluid pressure was slightly increased. All smears and cultures were negative for bacteria.

Released for publication by the War Department Manuscript Board, which assumes no responsibility, other than censorship, for the contents of this article.

Owing to lack of space, this article has been abbreviated in THE JOURNAL by omission of a review of available information. The complete article appears in the authors' reprints.

TABLE 1.—*Consolidated Record of Thirteen Cases of Acute Encephalitis Observed at Station Hospital, Fort Sam Houston, Texas, July and August 1941*

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9	Case 10	Case 11	Case 12	Case 13
Date of admission	7/19/41	7/25/41	7/27/41	7/30/41	7/30/41	8/3/41	8/5/41	8/5/41	8/7/41	8/8/41	8/9/41	8/9/41	8/30/41
Age	18 years	30 years	35 years	37 years	21 years	26 years	20 years	22 years	18 years	27 years	22 years	20 years	21 years
At Sabinal, Texas	July 7 to 18	July 7 to 18	July 7 to 18	No	July 7 to 18	July 7 to 18	July 21 to 25	July 21 to 26	July 21 to 26	July 21 to 26	July 21 to 26	July 21 to 26	August 6 to 18
Headache	+	+ frontal and occipital	+ left parietal ear	+++ behind eyes	++	++ left ear	+++ generalized	+	++ temporal	+	++	+	++
Chills	++	+	+	.....	+	+	+	+	+	++	++	+	+
Nausea	+	+	+	+	++	++	+	+	+	++	++	++	+++
Vomiting	+	++	+	+	++	.....	++	+++	.....	+	.....	+++	+++
Insomnia	+	.....	+	.....	.....	+	+++	++	.....	.....	++	++	++
Abdominal pain	.....	.....	.....	.....	.....	.....	+	+	.....	.....	.....	+ generalized	
Backache and joint pain	++	+++	+++	+	++	++	.....	+	++	++	+	++	++
Vertigo	.....	+	.....	.....	++	+	Deafness	.....	.....	+	++	+	++
Stiff neck	+	+	+	+	+	+	+	.....	++	.....	++	++	+
Tremors	.....	.....	+	+++ severe	++								
Confusion	+++	++	+	Pronounced	+++	+++	++	+++	+++	.....	+ syncope once		
Kernig's	+	.....	.....	.....	.....	.....	.....	+	.....	.....	.....	.....	+
Reflexes	Increased deep	Knee jerks decreased	Normal	Ankle clonus exhaustible +++	Slight increased deep; decreased upper abdominal	Increased deep; unable to void	Slight increased deep	Increased deep	Increased deep; upper abdominal absent	Normal	Increased deep	Increased deep bilateral only	++
Visual sign	.....	.....	.....	Dimness of vision	Diplopia	.....	.....	.....	.....	.....	.....	Photophobia	
Before hospitalization	1 day	4 days	3 days	3 days	1 day	5 days	1 day	6 days	3 days	2 days	3 days	See below	2 days
Onset	7/18/41	7/21/41	7/24/41	7/27/41	7/29/41	7/29/41	8/4/41	7/30/41	8/6/41	8/6/41	8/6/41	8/9/41	8/28/41
Temperature	103 to 104; saddle-back curve; intermittent period with normal interval for several days	Admission 101.4; low grade for 4 days	Admission 104.4; temperature for 4 days	Admission 103.2; maximum 105; progressive abating remittent fever 10 days	Admission 102; maximum 104.4; afebrile in 7 days	Admission 99.6; maximum 102.6; normal in 4 days	Admission 102.4; maximum 103.2; fever 3 days, then saddle-back 36 hours; normal in 2 days	Admission 103.4; maximum 103.6; high remittent 5 days; normal 1 day (saddle-back), then 1 day 102, then normal	Admission 104; maximum 104.6; high remittent 3 days, then saddle-back 2 days; then temperature 2 days	Admission 102.4; (the maximum) high remittent for 4 days	Admission 102.4; maximum 104; high intermittent for 4 days	Admission 102; maximum 104.2; high remittent 4 days, then saddle-back and temperature 2 days	Admission 99.6; maximum 101; normal after puncture
White blood cells	14,500 (80%)	13,200 (70%)	12,500 (83%)	11,250 (68%)	14,450 (90%)	11,000 (82%)	15,850 (90%)	17,150 (82%)	9,350 (57%)	7,550 (60%)	12,900 (75%)	6,100 (87%)	7,700 (62%)
Polymorphonuclears	7,800 (70%)	7,650 (58%)	.....	7,400 (42%)	8,900 (75%)	6,500 (71%)	5,400 (69%)	7,600 (80%)	7,500 (80%)	5,250 (70%)	8,400 (80%)	5,300 (77%)	
Pulse	Bradycardia	Bradycardia	Bradycardia	Bradycardia	Bradycardia	Tachycardia	Bradycardia	Bradycardia	Commensurate	Commensurate	Bradycardia	Commensurate	Commensurate
Acute respiratory symptoms	None	Cough; red and granular pharynx	Cough; red and granular pharynx	Injected pharynx	Chest pain; herpes; granular pharynx	Cough; red and granular pharynx	Red and granular pharynx	Red and granular pharynx; sore throat	Red pharynx	Pharynx injected	Hyperemic pharynx	Congested nares; red pharynx	None
Progress and treatment	Excellent response to spinal tap; rapidly became afebrile; sulfapyridine 3 days—no effect	Dramatic relief from spinal tap in 30 minutes; palliative treatment; rapidly better	Sulfapyridine 3 days; no effect; excellent response to spinal tap with relief; headache 15 minutes	Very sick; pronounced neurologic findings; dramatic recovery after tap; no other treatment	Very ill at first; dramatic relief from tap	Disoriented; unable to void 2 days; progress varied; bellicose attitude; definite relief from spinal tap with gradual improvement; personality problem	Disoriented; dramatic relief from spinal tap; personality problem	Dramatic relief from spinal tap; no other treatment	Patchy memory; dramatic relief from tap; neurologic cleared after tap	Dramatic relief from spinal tap with fever drop-stat.; intermittent cystalgia few days	Dramatic relief from spinal tap; needed repeat tap for relief; no other treatment	Dramatic relief from tap; had photophobia, mild occasional cephalalgia; no other treatment	Excellent response to spinal taps; salicylates used
Sedimentation rate	8/19/41 2 mm. (1 hr.)	.....	8/19/41 10 mm. (1 hr.)	8/19/41 18 mm. (1 hr.)	8/23/41 1 mm. (1 hr.)	8/23/41 46 mm. (1 hr.)	8/19/41 33 mm. (1 hr.)	8/23/41 49 mm. (1 hr.)	8/23/41, 22 mm. (1 hr.)	8/23/41, 35 mm. (1 hr.)	8/23/41, 37 mm. (1 hr.)	8/23/41, 40 mm. (1 hr.)	
Confirmation of diagnosis	.....	.....	.....	Positive for western equine encephalitis by complement fixation and cross neutralization									

TABLE 2.—*Spinal Fluid Findings*

	Cell Count	Differential	Globulin	Chlorides, Mg.	Sugar, Mg.	Total Proteins, Mg.
Case 1. Admitted July 19/41						
July 25	800	50% polymorphonuclears	+	...	41.5	..
July 26	327	.....	+	...	55	..
July 31	88	.....	..	...	..	..
Aug. 4	480	.....	+	...	55	..
Aug. 13	200	94% lymphocytes	—	...	44	75
Aug. 23	...	94% lymphocytes	—	...	74	74
Aug. 30	6	100% lymphocytes	..	...	65	71
Sept. 19	0	.....	—	845	..	71
Case 2. Admitted July 25/41						
July 28	154	90% polymorphonuclears	—	...	47	..
Aug. 4	852	.....	..	...	56	..
Aug. 13	9	.....	—	...	44	56
Aug. 23	4	100% lymphocytes	..	...	32	45
Aug. 30	3	100% lymphocytes	..	...	50	60
Sept. 19	2	.....	—	900	..	68
Case 3. Admitted July 27/41						
July 31	315	90% lymphocytes Slightly	+	...	66	..
Aug. 4	180	90% lymphocytes	..	...	55	..
Aug. 31	...	..... Slightly	+	...	57	80
Aug. 13	55	90% lymphocytes	—	...	66	60
Aug. 23	14	.....	—	...	56	56
Aug. 30	5	100% lymphocytes	..	...	55	60
Sept. 19	2	.....	—	795	..	60
Case 4. Admitted July 30/41						
Aug. 2	210	90% lymphocytes	—	...	77	..
Aug. 4	137	.....	—	...	75	..
Aug. 13	222	100% lymphocytes	+	...	64	124
Aug. 18	6	100% lymphocytes	—	...	42	64
Aug. 30	8	100% lymphocytes	..	...	56	64
Sept. 19	9	.....	—	820	..	71
Case 5. Admitted July 30/41						
Aug. 5	235	.....	—	...	..	..
Aug. 13	88	97% lymphocytes	—	...	54	68
Aug. 18	6	100% lymphocytes	—	...	38	32
Aug. 30	9	100% lymphocytes	..	...	53	60
Sept. 19	9	.....	—	720	..	71
Case 6. Admitted Aug. 5/41			Slightly			
Aug. 5	21	62% polymorphonuclears	+	...	..	..
Aug. 6	1	.....	—	...	71	56
Aug. 13	87	90% lymphocytes	—	...	58	60
Aug. 18	2	100% lymphocytes	—	...	40	31
Aug. 30	3	100% lymphocytes	..	...	53	60
Case 7. Admitted Aug. 5/41						
Aug. 11	288	.....	—	...	52	68
Aug. 13	212	97% lymphocytes	—	...	62	75
Aug. 18	6	.....	+	...	36	71
Aug. 29	7	100% lymphocytes	..	...	58	56
Sept. 19	0	.....	—	750	..	56
Case 8. Admitted Aug. 5/41						
Aug. 6	56	90% polymorphonuclears	—	...	66	60
Aug. 13	268	99% lymphocytes Slightly	+	...	57	56
Aug. 23	40	.....	—	...	50	56
Aug. 30	30	87% lymphocytes	..	...	38	64
Sept. 12	3	.....	—	...	51	60
Sept. 19	6	.....	—	870	..	56
Case 9. Admitted Aug. 7/41						
Aug. 13	422	90% lymphocytes	—	...	49	60
Aug. 26	...	97% lymphocytes	—	...	72	71
Aug. 30	84	95% lymphocytes	..	...	47	56
Sept. 19	7	.....	—	855	..	60
Case 10. Admitted Aug. 8/41						
Aug. 12	276	80% lymphocytes	—	...	49	56
Aug. 18	0	.....	—	...	54	45
Aug. 30	78	98% lymphocytes	..	...	49	72
Sept. 12	13	.....	—	...	61	60
Sept. 19	8	.....	—	900	..	56
Case 11. Admitted Aug. 9/41						
Aug. 12	70	72% lymphocytes	—	...	58	81
Aug. 18	56	50% lymphocytes	—	...	39	56
Aug. 30	4	100% lymphocytes	..	...	50	60
Sept. 19	6	.....	—	800	..	48
Case 12. Admitted Aug. 9/41						
Aug. 15	960	91% lymphocytes	—	...	54	56
Aug. 18	56	100% lymphocytes	Trace	...	38	40
Aug. 23	247	.....	—	...	42	71
Aug. 30	219	95% lymphocytes	..	...	40	71
Sept. 12	9	.....	—	...	51	56
Sept. 19	10	.....	—	750	..	71
Case 13. Admitted Aug. 30/41						
Aug. 30	132	99% lymphocytes	..	...	68	56
Sept. 12	36	100% lymphocytes	—	...	75	60
Sept. 19	34	100% lymphocytes	—	900	..	60

Of this group of 13 patients, 12 of the soldiers had been on a maneuver in Uvalde County, Texas, from ten to fourteen days prior to the onset of symptoms. One soldier, a member of the Air Corps, had spent a night at Brownsville, Cameron County, Texas, about ten days prior to admission. He stated that while sleeping in his plane to protect a cargo of supplies he suffered many mosquito bites.

In both Uvalde and Cameron counties many cases of equine encephalomyelitis in horses had been observed and reported, early in July, by veterinarians of the state and the army. It will be noted that the epidemic in animals occurred about one month prior to the onset of symptoms in the soldiers included in this report.

The disease was self limited in its course, and all the men who had been ill were returned to a duty status following an uneventful recovery in about eight weeks. No fatalities occurred.

In all cases blood was drawn at the time that the diagnosis was made, at the end of three weeks and again at the end of eight weeks. Serum was forwarded to the Army Medical School Laboratory, Washington, D. C., for confirmation of the diagnosis and identification of virus, but, as stated before, out of this group of 13 cases 1 case only was proved by laboratory tests to be due to a known virus, namely the western equine strain.

TABLE 3.—*Signs and Symptoms Noted in Thirteen Cases of Encephalitis*

Headache	13	Vertigo	7
Nausea	13	Abdominal pain	3
Fever	13	Positive Kernig's sign	3
Backache and joint pain	12	Tremors	3
Chills	12	Decreased abdominal reflexes	2
Stiff neck	11	Photophobia	1
Pharynx inflamed	11	Diplopia	1
Vomiting	10	Dimness of vision	1
Mental confusion	10	Impaired hearing	1
Increased deep reflexes	9	Urinary incontinence	1
Insomnia	8	Ankle clonus	1

Up to the present time encephalitis has not received much consideration as a disease to be reckoned with among our troops. As a matter of fact, very few cases thus far have been recognized and reported by the Army. But with the advent of a constantly expanding military force and with large concentration of troops in urban areas, it is only reasonable to suppose that the summer months will bring an increasing number of cases of this disease.

The veterinary profession has long since recognized the seriousness of encephalomyelitis in horses and mules. Members of the Army Veterinary Corps, such as Kelser, Reynolds and others, have done outstanding pioneer work in the investigation of this disease. They have undoubtedly made great strides in the protection of animals with a bivalent vaccine. The Army Medical Corps should be constantly on the alert in order to recognize and to handle intelligently epidemics of encephalitis, since our troops are now, or soon will be, in areas of the world where this disease is known to exist, such as Australia, Japan, Russia and various sections of the United States.

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SUMMARY AND CONCLUSIONS

1. It is apparent from published reports that epidemics of acute infectious encephalitis are increasing in frequency and severity.

2. Epizootic epidemics should be considered as warning signals of the possible transmission of the disease to military personnel in infected areas. Close cooperation between medical and veterinary professions is therefore essential.

3. The 13 cases of acute infectious encephalitis herein reported presented identical features. However, 1 case only was positively identified as being caused by a known strain of neurotrophic virus, namely the western equine.

4. It is our opinion that further investigation will reveal other strains of neurotrophic viruses or will disclose alterations in the biologic activities of those already identified.

5. Acute encephalitis is self limited in its course. The cases under our observation manifested acute symptoms for a period of about one week. Thus the disease, in mild epidemics, may be easily overlooked.

6. Treatment is mainly symptomatic. Lumbar punctures and intravenous saline solution gave dramatic relief from the severe headaches. Sedatives were used when necessary. The sulfonamide drugs were not found to be of any value.

7. The prevention and control of this disease deserves the thoughtful consideration of all members of the Medical Corps of the Army. The approach to the problem should be considered under two heads: (*a*) the control of the reservoirs and vectors of the disease by immunization and isolation of animals and the eradication of the known vectors and (*b*) the use of a purified vaccine for the immunization of military personnel if the disease should become epidemic in areas of large troop concentrations.

8. For a differential diagnosis in this epidemic we were confronted with the signs of diffuse cerebral involvement, i. e., nausea, vomiting, stiffness of the neck and varied neurologic manifestations. At the time of admission to the hospital a severe influenza or meningismus was thought of. The laboratory examination made on the spinal fluid aided in differentiating these diseases. Spinal fluid was constantly negative for organisms; the sugar contents were normal. These factors, together with the rapid clearing of the symptoms, removed the specific meningitides from the picture.

Paralysis of muscle groups was not seen; therefore, poliomyelitis was not seriously thought of. In none was there a history that would point to a diagnosis of postinfectious encephalitis. The fact was soon evident that we were dealing with a disease entity occurring in the summer months in a group of soldiers who had been on a maneuver in Uvalde County, Texas, where equine encephalomyelitis had been diagnosed and reported.

The disease entity presented all the clinical manifestations of a neurotrophic virus disease. Laboratory investigation, however, failed to reveal the specific virus responsible for the epidemic, except in 1 case (case 4); the course in this case differed in no respect from the others.

TETANUS FROM SULFONAMIDE DUSTING POWDERS

DEVELOPMENT IN GUINEA PIGS TREATED WITH SULFANILAMIDE POWDER CONTAMINATED WITH WASHED TETANUS SPORES

HENRY WELCH, PH.D.
GLENN G. SLOCUM, PH.D.
AND
ROBERT P. HERWICK, PH.D., M.D.
WASHINGTON, D. C.

The wide use of sulfonamide dusting powders for the treatment of war injuries caused the Food and Drug Administration to make an intensive study of the bacteriologic flora of the preparations on the market. Approximately 50 per cent of the powders examined by us contained viable bacteria, namely staphylococci, streptococci, diphtheroids and both aerobic and anaerobic spore forming organisms.[1] It was of interest that a large number of powders examined, although not sterilized following manufacture, were found to be sterile. Those sulfonamide powders examined which had been processed in the final package to destroy organisms that may have been present were invariably found to be sterile. Following these studies the Food and Drug Administration issued a letter requesting that manufacturers of sulfonamide drugs promptly take the steps necessary to sterilize these drugs and to package them so as to prevent contamination. Recent examinations made of sulfonamide powders have indicated that the sterilization processes developed by the manufacturers have been effective in producing sterile powders.

Although in the bacteriologic analysis of these drugs pathogenic anaerobes were not isolated, this cannot preclude the possibility of such contamination since anaerobic sporeforming organisms were found with considerable frequency. The presence of such organisms as Clostridium tetani, Clostridium perfringens, Clostridium oedematiens, Clostridium fallax, Clostridium septicum or even Clostridium sporogenes in sulfonamide dusting powders to be used in deep wounds constitutes an added and unnecessary hazard which can easily be avoided by proper sterilization. Since the sulfonamides act largely through bacteriostatic effect rather than through bactericidal action, it could not be expected that they would be active against spores or that such drugs would be self sterilizing.

Numerous observations during the war of 1914-1918 showed the presence of Cl. tetani in the wounds of men who exhibited no symptom of the disease. In the examination of the wounds of 100 soldiers not suffering from tetanus, Tulloch [2] found this organism nineteen times. It was also demonstrated that tetanus might not develop for weeks or months after the wound had healed and then might suddenly appear following an operation, perhaps on another part of the body. Although prophylactic use of tetanus antitoxin prevented the immediate development of the disease, this procedure had no destructive effect on the spores themselves, which could and did lie dormant at the site of

From the United States Food and Drug Administration.

1. In testing sterility, Linden's modification of Brewer's thioglycollate medium, Federal Register, Feb. 6, 1942, was used.

2. Tulloch, W. J.: Report of Bacteriological Investigation of Tetanus Carried Out on Behalf of the War Office Committee for the Study of Tetanus, J. Hyg. **18**: 103 (Aug.) 1919.

the original wound for long periods of time. Brunzel [3] reported a case of tetanus which developed following an operation at the site of an old war wound inflicted seven years earlier, while Ernst [4] has reported a similar case in which tetanus developed after a hand was crushed, without breaking the skin, fourteen years after the primary injury. Bonney, Box and MacLennan [5] reported the recovery of Cl. tetani from abdominal scar tissue ten years after an attack of postoperative tetanus.

TABLE 1.—*Implantation of Sulfanilamide Powder and Washed Tetanus Spores in Guinea Pigs with Production of Tetanus*

Number of Spores Implanted	Number of Animals	Animals Developing Tetanus	
		Directly After Implantation	After Trauma *
100,000	4	1	0
10,000	4	3	0
1,000	4	0	0
100	4	0	0
10	4	0	0
Total	20	4	0

* Physical trauma or staphylococci and 2 cc. of 10 per cent kaolin containing 10 mg. of calcium chloride (sixty-five to seventy days after implantation).

Animals surviving were killed ninety-two days after implantation. Cl. tetani was not insolated.

We have in the present war, through the use of sulfonamide powders, a similar situation. If sulfonamide powders are contaminated with tetanus spores and are dusted into deep wounds, the bacteriostatic action of these drugs may readily prevent development of vegetative forms. With the subsequent absorption of the drug and final healing of the wound, tetanus spores may be left at the site of the wound for possible future development when the proper conditions for vegetation of the spore forms are made available.

Tetanus toxoid is being used by both the Army and the Navy for protection of their personnel, and undoubtedly a large percentage of those treated will have adequate protection. However, very few of the civilian population will have advantage of this prophylactic measure.

In the present investigation a study has been made of the effect of sulfanilamide dusting powder on a suspension of washed tetanus spores implanted into guinea pigs, which are known to be readily susceptible to experimentally induced tetanus. The strain of Cl. tetani used was a laboratory stock culture and produced a moderate amount of toxin. The tetanus spore suspensions were prepared in chopped meat culture under Vaspar seal, washed free from toxin with distilled water, and then heated at 82 C. for twelve minutes to destroy vegetative forms. For implantation the hair was removed with electric clippers from an area about 2 inches in diameter on the right flank of the animal. Under local anesthesia an incision about 2 cm. long was made through the skin, parallel to the spine, anterior to the hip joint. By means of blunt dissection with a hemostat a subcutaneous pocket was prepared in the plane of cleavage between the skin and the deeper structures and extended about 3 cm. along the flank of the animal. The pocket was held open with forceps and the sulfanilamide powder insufflated into the cavity until it was approximately half full. The desired number of tetanus spores suspended in 0.1 or 0.05 cc. of distilled water were then dropped onto the powder from a hypodermic syringe. After addition of the tetanus spores the pocket was filled to overflowing with sulfanilamide, and one or two skin clips were then used to close the opening. The clips were removed when the wound had healed (usually forty-eight hours). Ninety guinea pigs were treated in this manner.

In the preliminary implantations 20 animals were used. These were divided into five groups of 4 each and each group inoculated with 100,000, 10,000, 1,000, 100 and 10 spores, respectively. After a period of approximately sixty-five to seventy days those animals which failed to develop tetanus were traumatized by crushing of the tissue at the point of implantation or were injected with 0.1 cc. of a twenty-four hour broth culture of Staphylococcus aureus in the pocket area and, finally, all the animals were injected with 2 cc. of 10 per cent kaolin suspension containing 10 mg. of calcium chloride. The results are given in table 1.

It will be noted that 1 guinea pig in the group treated with sulfanilamide and 100,000 spores and 3 in the group receiving sulfanilamide and 10,000 spores contracted tetanus. Tetanus did not develop in the 1,000, 100 or 10 spore groups. In spite of severe injury produced in surviving animals sixty-five to seventy days after implantation, tetanus failed to develop. The latter results are in conformity with those of Francis,[6] who showed that although toxin free spores could be rendered pathogenic for guinea pigs by the injection of a tissue debilitant, such as quinine, it was found that, when the accessory agent was given subsequent to the injection of the spore suspension, the longer the delay the fewer the number of animals developing the disease. Francis concluded from his work that nearly all the spores perish in guinea pigs within thirty days after injection. In line with this we were unable to cultivate tetanus from any of the surviving animals

TABLE 2.—*Results of Implantation of Washed Tetanus Spores With and Without Sulfanilamide Powder and Staphylococci in Guinea Pigs*

Number of Spores Implanted	Staphylococci,* Cc.	Sulfanilamide Series			Controls; No Sulfanilamide		
		Number of Animals	Number of Animals Developing Tetanus		Number of Animals	Number of Animals Developing Tetanus	
			Directly After Implantation	After Trauma †		Directly After Implantation	After Trauma †
100,000	...	5	1	0	2	0	1
	0.1	5	1	0	2	0	1
50,000	...	5	0	0	2	0	0
	0.1	5	0	0	2	0	0
25,000	...	5	0	0	2	0	1
	0.1	5	4	0	2	0	1
10,000	...	5	0	0	2	0	0
	0.1	5	0	0	2	0	0
1,000	...	5	0	0	2	0	0
	0.1	5	0	0	2	0	0
Total	...	50	6	0	20	0	4‡

* Twenty-four hour broth culture of Staphylococcus aureus.

† Two cc. 10 per cent sterile kaolin suspension with 20 mg. of calcium chloride injected ten days after implantation.

‡ Four additional animals developed symptoms of shock and died within twenty minutes after injection of kaolin calcium chloride. Cl. tetani was isolated from site of implantation of 3 of these 4 animals.

3. Brunzel, H. F.: Tödlicher Tetanus nach einer sieben Jahre zurückliegenden Verwundung: Eine Warnung vor einer vergessenen Gefahr, Ztschr. f. Chir. **48**: 1684 (Nov.) 1921.

4. Ernst, Walter: Spättetanus durch Stumpfestrauma über 14 Jahre nach der ursachlichen Kriegsverletzung, Arch. für. Hyg. **106**: 235-240 (July) 1931.

5. Bonney, Victor; Box, Charles, and MacLennan, John: Tetanus Bacillus Recovered from Scar Ten Years After an Attack of Postoperative Tetanus, Brit. M. J. **2**: 10-11 (July 2) 1938.

6. Francis, Edward: Laboratory Studies on Tetanus, Bull. 95, U. S. Hyg. Lab., August 1914.

three months after implantation, even though at autopsy all the animals showed areas of necrosis at the site of the injection of kaolin and calcium chloride.

Following the preliminary series, experiments were conducted with a further group of 70 guinea pigs. Fifty animals were used to test the efficacy of sulfanilamide, and 20 served as controls. The test group of 50 animals was divided into five groups of 10, and each group had implanted sulfanilamide and spores (100,000, 50,000, 25,000, 10,000 and 1,000 respectively). Five of the 10 animals at each spore level were, in addition, injected with 0.1 cc. of a twenty-four hour broth culture of Staphylococcus aureus at the time of implantation of the sulfanilamide and spores. In the control series the 20 animals were divided into five groups of 4 each, and these received 100,000 50,000, 25,000, 10,000 and 1,000 spores respectively. Two guinea pigs at each spore level were injected with staphylococci in a similar manner to those in the test series of animals. The results are given in table 2.

It will be noted that in the sulfanilamide series 2 animals in the 100,000 spore group, 1 injected with staphylococci and 1 which was not, and 4 in the 25,000 spore group developed tetanus. The latter 4 had received staphylococci as well as sulfanilamide. Tetanus was not produced in the 10,000 or 1,000 spore groups of animals, whether or not staphylococci were implanted simultaneously with the spores and sulfanilamide powder. A total of 6 animals (12 per cent) developed the disease within four to seven days after implantation and died, forty-eight to seventy-two hours after the onset of the first signs of paralysis. Ten days later all surviving guinea pigs were injected at the site of implantation with 2 cc. of 10 per cent sterile kaolin suspension containing 10 mg. per cubic centimeter of calcium chloride. It will be noted (table 2) that none of the surviving animals developed tetanus following this traumatization in the area of the original implantation of sulfanilamide and tetanus spores. When the animals were killed ten days later Cl. tetani could not be isolated from the original site of implantation. In all cases of tetanus, paralysis appeared first in the leg nearest to the site of implantation, and shortly thereafter complete paralysis developed and death ensued.

In contrast to the sulfanilamide series, in which 6, or 12 per cent, of the animals developed tetanus following implantation of the drug and spores whether or not staphylococci also had been inoculated, none of the control series of 20 animals developed tetanus directly following implantation of spores or spores and staphylococci. However, 4, or 20 per cent, of the control series developed tetanus following traumatization with kaolin and calcium chloride ten days after implantation, while none of the animals in the sulfanilamide series developed the disease following traumatization. It is of interest that 4 of the guinea pigs in the control series exhibited symptoms of shock and died within twenty minutes after injection of kaolin and calcium chloride, and Cl. tetani was isolated from the site of implantation of three of these animals. Several animals in the sulfanilamide group also exhibited the same symptoms of shock, but none died. Ten days after traumatization, all the surviving animals in the control series were killed and examined. Cl. tetani could not be demonstrated at the site of implantation in any of these animals.

COMMENT

Whether or not tetanus will develop when spores are introduced into a wound probably depends on the presence or absence of some tissue debilitant. Many of the so-called accessory factors, such as mechanical trauma, hemorrhage, quinine, calcium chloride, sterile earth and other agents which are conducive to the development of this disease, have been described in the literature, and it appears to be accepted that the presence of these accessory factors causes areas of necrosis which bring about a lowering of the oxidation reduction potential, thus allowing the spores to germinate. When sulfanilamide contaminated with tetanus spores is implanted in guinea pigs, we do not have a dissimilar set of circumstances. Sulfanilamide inherently has no destructive effect on resistant spores, although it may inhibit the development of vegetative forms. The presence of a high concentration of sulfanilamide deep in the tissues may act as an "accessory factor" or foreign body, and, although this drug has little primary toxicity, in high concentrations it can undoubtedly set up areas of necrosis in some animals. Glynn [7] has shown a slight but definite toxic effect of sulfanilamide and to a lesser extent of sulfapyridine on striped muscle of rabbits.

As soon as the action of the tissue fluids removes the sulfanilamide by solution and absorption, the tetanus spores are able to germinate and produce their toxin. That this is not invariably true, however, is shown in these studies (table 2), since only a few animals develop the disease following implantation of sulfanilamide and tetanus spores. The production of necrotic tissue by injection of kaolin and calcium chloride failed to stimulate development of tetanus in the sulfanilamide series whether the time elapsed between implantation of the drug and spores and the injection of necrotizing substance was ten days or seventy days.

On the other hand, none of the 20 animals injected with spores or spores plus staphylococci (control series) developed tetanus directly after implantation, while, following injection of the necrotizing substance ten days later, 4, or 20 per cent, succumbed to the disease. The development of tetanus in the sulfanilamide series directly after implantation and the absence of the disease under similar conditions in the control series of animals not receiving this drug lends support to the view that under certain circumstances sulfanilamide may act as an accessory factor in the development of tetanus. From our inability to produce tetanus in the sulfanilamide series following the injection of a necrotizing substance, in contrast to the results obtained in the control series, it would appear that sulfanilamide may have a destructive effect on the spore suspension implanted. This effect may result from inhibition of the development of vegetative forms and the ultimate removal of spores through phagocytosis.

Even though the results reported are on a small series of animals, the indication is that in wounds treated with sulfanilamide contaminated with Cl. tetani there exists a paradoxical situation in which this drug under certain conditions may act as an "accessory factor" to the development of tetanus, yet inhibit its development through a destructive or inhibitive effect on tetanus spores.

7. Glynn, L. E.: The Effects of Sulfanilamide, Sulfathiazole and Sulfapyridine on the Development of Granulation Tissue and Their Toxic Action on Striped Muscle, J. Path. & Bact. 53: 183 (Sept.) 1941.

SUMMARY AND CONCLUSIONS

1. Sulfanilamide, contaminated with tetanus spores and implanted in guinea pigs, will not protect these animals from the development of tetanus.

2. Sulfanilamide may act as a tissue debilitant and thus in the presence of Cl. tetani be conducive to the development of tetanus.

3. All sulfanilamide dusting powders for use in deep wounds should be sterilized before use.

Since preparation of this manuscript, a case of fatal tetanus has been reported which developed following the use of unsterile sulfapyridine powder after a pelvic operation.[8]

Clinical Notes, Suggestions and New Instruments

PALINDROMIC RHEUMATISM

MILTON MAZER, M.D., WASHINGTON, D. C.

The term palindromic rheumatism has been applied by Hench and Rosenberg [1] to an unusual disease of joints and adjacent tissues recently described by them. Characterizing the disease are multiple episodes of acute arthritis, periarthritis and occasionally para-arthritis without fever. Typically, only one, though occasionally several, small or large joints are involved in an attack, with pain, swelling, redness and disability. The attacks are sudden in onset, reach a climax rapidly and then subside, leaving no residue. Despite scores of attacks at irregularly spaced long or short intervals, irreversible changes in the joints or periarticular tissues are not found.

REPORT OF CASE

A man aged 53, who during the first world war served in France for two years, first with the Y. M. C. A. and later with the Army of the United States, was employed as a university instructor from 1919 to 1927 and as secretary of a national college fraternity from 1927 to 1934. When first seen at this hospital in 1941 he had been employed only sporadically since 1934. His past medical history included measles, mumps, pertussis, scarlatina (without sequelae) and recurrent malaria in childhood. At 7 years of age he had an acute illness, colloquially called "brain fever," with unconsciousness for four or five days. There were no evident sequelae. At 37 a tonsillectomy was performed.

Since 1912 he has had recurrent attacks of pain, swelling, local increase in temperature and bluish red discoloration of various joints. The fingers, elbows, shoulders, knees, ankles, heels and left great toe have been involved frequently, the wrists and cervical portion of the spine less often. On six occasions one or the other temporomandibular joint has been affected. Although the disease has not been limited to any particular joint, the knees and ankles were most frequently affected at the onset of the condition, while the fingers have been involved in 75 per cent of the attacks occurring in the past two years. As a rule, one joint is involved in a single attack, occasionally two or more. Occasionally attacks overlap, one joint becoming involved during subsidence of the process in another.

The typical attack begins at approximately 3 p. m., reaching a maximum intensity in two hours, persisting in such degree for about five hours and slowly abating over a period of two to three days. The pain is described as a "severe throbbing ache," and in the past it was "excruciating." It is becoming progressively milder. At the onset of the condition the frequency of attacks was about every five days; a year ago it was seven to ten days, and in the past six months it has been ten to twelve days. In 1929 a complete remission lasted four months. It is thus seen that the patient has certainly had well over a thousand attacks in the thirty years of his illness.

Aside from the diffuse soft tissue reaction about the joints there has been no localized para-arthritis. Intercutaneous or subcutaneous nodules have never been noted. Occasionally, accompanying the joint involvement he has experienced pain over the anterolateral aspect of the upper part of the arm at the level of the biceps insertion. The left arm is the more frequently involved. The pain is increased by movement of the arm and persists for the duration of the joint involvement. There are no objective signs accompanying the pain in the upper part of the arm. Fever has never accompanied an attack. His appetite remains unchanged, and he has never lost weight ascribable to the condition. Though partially disabled he has never been forced to bed by an attack.

The attacks have no temporal relationship to infections of the upper respiratory tract. Enucleation of the tonsils in 1925 was without effect. His teeth have always been in good condition and well cared for. He believes that excessive walking may precipitate attacks involving the knees. The state of the weather or change of climate does not appear to influence the condition.

There is no personal or family history suggestive of the presence of an allergic state. No relationship of the attacks to the ingestion of any specific foods has been noted, although he believes he is better when partaking of a fairly light diet containing little beef. Cinchophen has been the most effective symptomatic remedy used. However, he has had no tophi, olecranon bursitis, renal calculi, fever or any other significant sign usually associated with gout. Nonspecific vaccine therapy and iodides were without effect. A low purine diet was likewise ineffective.

The earliest examination, data of which are available, was performed by Dr. P. S. Hench [2] at the Mayo Clinic in August 1929. The physical examination including that of the joints showed no abnormalities. The urine contained a faint trace of albumin and an occasional pus cell; the hemoglobin content was 80 per cent, the red blood cell count 4.4 million, the white blood cell count 6,700, the reaction to a flocculation test for syphilis negative and the uric acid content of the blood 3.4 mg. per hundred cubic centimeters. Dental roentgenograms and examination disclosed no evidence of infection. Roentgenograms of the feet were normal. Prostatic secretion showed evidence of a prostatitis.

Fig. 1.—Absence of permanent changes in the hands after large number of attacks.

He was first examined at this hospital on May 15, 1941. The general examination and also that of the joints (fig. 1)

8. Pharm. J. 148:192 (May 30) 1942.

From the Cardiovascular Research Unit, Veterans Administration Facility.

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1. Hench, P. S., and Rosenberg, E. F.: An Oft Recurring Disease of Joints (Arthritis, Periarthritis, Para-Arthritis) Apparently Producing No Articular Residues: Its Relationship to "Angioneural Arthrosis," "Allergic Arthritis" and "Atrophic Arthritis," presidential address of Dr. Hench before the American Rheumatism Association, New York, June 11, 1940; Palindromic Rheumatism.[8]

2. Hench, P. S.: Personal communication to the author.

revealed no abnormalities. Laboratory studies were negative: the urine was normal; the blood uric acid content was 3.5 mg., the blood sugar content 79 mg. and the blood nonprotein nitrogen 24 mg. per hundred cubic centimeters. X-ray examination of both knees, ankles, feet, elbows, wrists and hands showed no evidence of joint abnormality (figs. 2 and 3).

Fig. 2.—Absence of joint changes in hands.

He was seen on May 27 during an acute attack. There were moderate swelling and an increase in temperature of the phalangeal joint of the right thumb and the first phalangeal and metacarpophalangeal joints of the third finger of the left hand. There was no significant discoloration of the skin.

On Feb. 5, 1942 he was examined between attacks, with negative findings. He reported that since October 1941, when he had secured satisfactory employment, his attacks had become less frequent and significantly milder. At this visit laboratory studies showed red blood cell count 4.8 million, hemoglobin 14.3 Gm. per hundred cubic centimeters, white blood cell count 9,000, with a normal differential count, and sedimentation rate 3.5 mm. in one hour.

On March 28, during an acute attack, there were pain, swelling, redness and local increase in temperature in the metacarpophalangeal joint of the second finger of the right hand. The attack had begun two days before and was subsiding. A few hours before the examination pain had begun in the right knee, and the joint was red and warm though not yet swollen.

On May 12, in an interval between attacks, the blood cholesterol content by Bloor's method was 263 mg. per hundred cubic centimeters.

COMMENT

The most unusual feature of the syndrome described by Hench and Rosenberg [3] and in the case reported is the absence of permanent changes in the joints after recurrent attacks of acute arthritis over long periods (figs. 1, 2 and 3). The patient certainly had over a thousand attacks in thirty years, and yet all the joints were clinically and roentgenologically normal. Histologically, material from two joints between attacks was entirely normal.[3] Biopsy of material taken from two acutely involved joints and one tendon showed an inflammatory polymorphonuclear exudate. Significant numbers of eosinophils were not seen.[3]

Hench and Rosenberg [3] have considered the etiologic possibilities in some detail. Neither the evidence for an infective nor an allergic mechanism was conclusive, and no conclusions were drawn. In a group of 54 cases of an unusual type of arthritis described by Kahlmeter [4] and similar in many respects to palindromic rheumatism, the author indicated his belief in an allergic origin by his designating the condition allergic rheumatism. A syndrome similar to but differing in some respects from both palindromic rheumatism and allergic rheumatism was described by Solis-Cohen [5] under the term angioneural arthrosis. This syndrome appeared in persons with evidence of vasomotor instability. The two conditions are similar in some respects but not in others to palindromic rheumatism, but further study will be required to determine whether they are the same or distinct conditions.

Since there is no adequate evidence for either an infectious or an allergic cause of palindromic rheumatism, it may be fruitful to speculate concerning another possibility, namely psychogenic factors, as has been suggested for other types of arthritis.[6] In the case herein reported there are two periods which suggest such a possibility. Coincident with securing satisfactory employment after a seven year period of almost complete unemployment the severity of the patient's symptoms decreased and the frequency of attacks became less. He ascribed the change to the institution of more regular habits of eating and sleeping. In 1929 he had a complete remission of symptoms for four months. He attributed this to the use of orthopedic shoes. It must be noted, however, that the shoes were prescribed under conditions of heightened suggestibility at a medical shrine in another country. During the interviews no frankly neurotic symptoms were elicited, though his failure to marry is suggestive of incomplete adjustment. One of Hench and Rosenberg's [3] patients "adopted a baby, quit worrying about herself and was cured."

The nature of the disease itself is compatible with either a metabolic or a psychologic causation. The complete reversibility of the pathologic process even after hundreds of attacks certainly is not typical of infectious states. Even allergic reactions leave organic residues after repeated attacks. The presence of local inflammation certainly does not limit one to an infectious cause any more than the local and general pyrexia do in gout. Interesting in suggesting the presence of a metabolic disturbance is the observation of Hench and Rosenberg [3] that blood fatty acids and total lipids are moderately elevated.

SUMMARY

A man aged 53 had frequently recurrent acute arthritis of thirty years' duration without permanent changes in the joints.

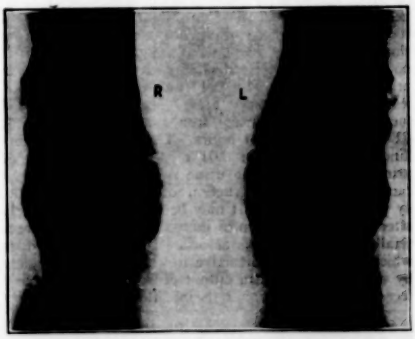

Fig. 3.—Absence of joint changes in knees.

The syndrome conforms in all significant respects to palindromic rheumatism, 34 cases of which were described by Hench and Rosenberg,[3] and is so classified.

2650 Wisconsin Avenue Northwest.

3. Hench, P. S., and Rosenberg, E. F.: Palindromic Rheumatism: A "New" Oft Recurring Disease of Joints (Arthritis, Periarthritis, Para-Arthritis) Apparently Producing No Articular Residues: Report of Thirty-Four Cases (Its Relationship to "Angioneural Arthrosis," "Allergic Rheumatism" and Rheumatoid Arthritis), Proc. Staff Meet., Mayo Clin. **16**: 808-815 (Dec. 17) 1941.

4. Kahlmeter, G.: Y a-t-il des formes de rheumatisme articulaire et périarticulaire d'une nature réellement allergique? Acta med. Scandinav. **109**: 432, 1939.

5. Solis-Cohen, Solomon: On Some Angioneurotic Manifestations In and Around Joints, Frequently Mistaken for Gout and Rheumatism, Tr. A. Am. Physicians **28**: 739, 1913; Am. J. M. Sc. **147**: 228, 1914.

6. Nissen, H. A., and Spencer, K. O: The Psychogenic Problem (Endocrinal and Metabolic) in Chronic Arthritis, New England J. Med. **214**: 576-581 (March 19) 1936.

Special Articles

HANDBOOK OF NUTRITION: VII

IRON IN NUTRITION

REQUIREMENTS FOR IRON

CLARK W. HEATH, M.D.
BOSTON

These special articles on foods and nutrition have been prepared under the auspices of the Council on Foods and Nutrition. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the Council. These articles will be published later as a Handbook of Nutrition.—Ed.

In spite of evidence to the contrary, the idea is still current that when the diet is deficient in iron the red cells soon become deficient in hemoglobin (hypochromic) and smaller (microcytic) than normal. This idea is certainly not true for the healthy adult male or for healthy women after the menopause. It may sometimes be true for growing children and for women during their menstrual life or during pregnancy, or for any person who has lost or is losing considerable amounts of blood from some lesion of the body. Much remains to be learned about the metabolism and functions of iron, but of this we can be quite sure: a diet deficient in iron has not been known to produce iron deficiency except in the presence of increased needs for iron such as growth, pregnancy or blood loss.

One basic fact is essential in any adequate consideration of iron deficiency: iron is an element and, unlike certain organic substances of the food which are necessary to the body, such as the vitamins, it is not destroyed or used up in the body but is conserved and, if not excreted, can be utilized again and again. Another important fact concerning iron is that it is not excreted by either kidney or intestinal tract in appreciable quantities. It has been called a "one way substance;" that is, it may be absorbed, or if not absorbed it will be eliminated in the stools, but, in any ordinary sense it is not excreted. The iron content of the normal human urine is very small. Lintzel [1] regarded it as negligible, less than 0.02 mg. per liter. Marlow and Taylor [2] found values for urinary iron ranging from 0.03 to 0.8 mg. in twenty-four hours. Lanyar, Lieb and Verdino [3] found less than 0.01 mg. of iron per liter of urine. The iron of the urine is not increased significantly even after destruction of the red blood cells by phenylhydrazine.[4] It may be increased immediately after the administration of inorganic compounds parenterally.[5] Hahn and his associates,[5] in a study of dogs which were given radioactive iron as ferrous gluconate by vein, found an extra output of iron in the urine and feces for a few days after its injection (2 to 8 per cent of the total amount injected). Following this the urinary iron dropped to traces, but the stools contained from 0.05 to 0.4 mg. of radioactive iron daily. The bile contained insignificant amounts of iron, which confirms the findings of others. The authors considered the evidence conclusive that the dog excretes iron only with difficulty and in small amounts. Maddock and Heath [6] decided from microscopic study of the gastrointestinal tract and of colonic explants on the abdominal walls of dogs before and after the administration of iron that iron cannot be observed to be excreted by these organs.

Studies of the balance between the iron ingested and the iron contained in the urine and feces indicate no excess of the latter over the former (negative balance) and indeed there is a necessary positive balance in the case of children and pregnant women. This is illustrated in the summary shown in table 1. An exception is the case of the two fasters Cetti and Breithaupt. Here, however, the experimental periods were short, the methods probably faulty, and the conditions of fasting are in no way comparable to ordinary nutritional circumstances. Particular note should be made of the observations of Lintzel. In his experiments even when the diet contained as little as 0.9 mg. of iron daily, the caloric intake being adequate, iron balance was reached within a few days.

To the evidence of the chemical and microscopic studies which show meager iron excretion from the body may be added the evidence from certain clinical observations. Study of patients having hypochromic anemia which is alleviated by iron medication shows that serious blood loss can usually be demonstrated in such patients. In so-called idiopathic hypochromic anemia, careful clinical study of cases has shown the wide prevalence of abnormal blood loss, usually from menorrhagia or bleeding hemorrhoids and often occurring in a subtle and chronic form.[7] The evidence is so overwhelming that iron deficiency occurring in men and women is associated with abnormal blood loss that, even in the presence of very poor diets and conditions of the gastrointestinal tract which interfere with the absorption of iron, a history of blood loss in such cases is always to be expected and should be most carefully searched for. I have not yet observed such a case which I felt could reasonably be supposed to have resulted from a prolonged negative iron balance.

In contrast to the very small amounts of iron which are lost from the body by the renal and gastrointestinal routes are the significantly large amounts of iron which may sometimes be shown to be absorbed. The metabolism experiments of Fowler and Barer [8] and of Brock and Hunter [9] show that an astonishingly large amount of iron may be retained by the body. Retention of over 6 Gm. of iron in an experimental period has apparently been demonstrated: more than the amount of iron assumed to be present normally in the body. That the body in certain cases can retain large amounts of iron is demonstrated in hemochromatosis, in which over 50 Gm. of iron may be recovered from the tissues. In this disease there may be disturbance of a control mechanism which limits the retention of iron in normal

1. Lintzel, W.: Neuere Ergebnisse der Erforschung des Eisenstoffwechsels, Ergebn. d. Physiol. **31**: 844, 1931.
2. Marlow, Arthur, and Taylor, F. H. L.: Constancy of Iron in the Blood Plasma and Urine in Health and in Anemia, Arch. Int. Med. **53**: 551 (April) 1934.
3. Lanyar, F.; Lieb, H., and Verdino, A.: Ueber die Ausscheidung von Eisen im menschlichen Harn unter physiologischen und pathologischen Verhältnissen, Ztschr. f. physiol. Chem. **217**: 160, 1933.
4. Reznikoff, Paul; Toscani, Vincent, and Fullarton, Ruth: Iron Metabolism in a Normal Subject and in a Polycythemic Subject, J. Nutrition **7**: 221 (Feb.) 1934. Barer, Adelaide; Paul, W. D., and Baldridge, C. W.: Studies on the Relationship Between Oxygen Consumption and Nitrogen Metabolism: III. Polycythemia Vera, J. Clin. Investigation **13**: 15 (Jan.) 1934. Hahn, Bale, Hettig, Kamen and Whipple.[5]
5. Hahn, P. F.; Bale, W. F.; Hettig, R. A.; Kamen, M. D., and Whipple, G. H.: Radioactive Iron and Its Excretion in Urine, Bile and Feces, J. Exper. Med. **70**: 443 (Nov.) 1939.
6. Maddock, Stephen, and Heath, C. W.: Is Iron Excreted by the Gastrointestinal Tract of the Dog? Arch. Int. Med. **63**: 584-589 (March) 1939.
7. Heath, C. W., and Patek, A. J.: The Anemia of Iron Deficiency, Medicine **16**: 267-350 (Sept.) 1937.
8. Fowler, W. M., and Barer, A. P.: Iron Retention Following Use of Ferric Ammonium Citrate in Hypochromic Anemia, J. A. M. A. **104**: 144, 1935.
9. Brock, J. F., and Hunter, D.: The Fate of Large Doses of Iron Administered by Mouth, Quart. J. Med. **6**: 5, 1937.

individuals. In dogs and in man it has been demonstrated that iron is retained in larger amounts when there is need for materials for blood regeneration.[10] The iron is apparently absorbed largely in the upper small intestine and perhaps in the stomach.[11] It is conveyed in the plasma, possibly also in the red blood cells and is found stored particularly in the liver, spleen, kidneys, skin and apparently the bone marrow. In persons in good nutrition there is presumably a store of such iron which is available should a need arise, for example the need occasioned by acute blood loss.

Although it cannot be said that adult man will become anemic if his diet contains too little iron, much can be said in favor of diets containing adequate amounts of iron for the population at large. Sherman[12] has estimated the "dietary standard" of man as about 12 mg. of iron daily. I estimated the diets of over 200 healthy male college undergraduates to contain an average of 16 mg. of iron a day and to vary from 6 to over 20 mg. of iron a day. The Committee on Food and Nutrition of the National Research Council[13] has recommended the daily allowances for iron given in table 2.

The need for iron varies greatly at different ages and under different conditions. In growth there is a need for iron to supply the hemoglobin in the expanding blood volume. In fact, by far the greater part of the functioning iron of the body is located in the circulating hemoglobin. The blood under ordinary conditions contains more than five times the concentration of iron of any organ of the body, and its mass is considerably larger than that of the liver.[14] Growth of the blood volume can be placed beside loss of blood as an important contributing cause of iron deficiency. At puberty as well as in infancy there is an acceleration of growth and an increase in the circulating hemoglobin. At puberty in girls there is also a loss of hemoglobin (and therefore of iron) in the menstrual fluid. In pregnancy there is an increased need for iron to supply the growing fetus. The child at birth normally has a certain amount of stored iron which is available for use. In prematurity and twin births this may be considerably limited and these infants are later vulnerable to iron deficiency. Finally, during lactation there is loss of iron which annually probably is similar in quantity to the menstrual loss. Unless iron is provided to replace what is lost or to build new hemoglobin under these conditions, iron deficiency anemia will manifest itself. Sufficient stored iron will, of course, provide the necessary iron. But, if the stores of iron are insufficient, iron must be provided through the food or through medication, if iron deficiency anemia is to be avoided. Some-

TABLE 1.—*Summary of Studies on Iron Metabolism*
(From Heath and Patek[1])

Authors	Conditions	Daily Intake of Iron, Mg.	Daily Output of Iron, Mg.	Daily Iron Balance, Mg.
Josephs, H. W.: Bull. Johns Hopkins Hosp. **55**:259, 1934	Normal infants; milk diet			
	(1) Birth to 2 months	.....	....	—0.01
	(2) 2 months to 4 months	.....	....	+0.12
	(3) 4 months to 6 months	.....	....	+0.18
Wallgren, A.: Rev. franç. de pédiat. **9**:196, 1933	5 normal infants aged 3 weeks to 11 months; breast milk	.....	....	+0.18
Ascham, L.: J. Nutrition **10**:337, 1935	6 preschool children, weight 17.1 to 19.3 Kg., 90 experimental days	10.67	9.41	+1.26
Leichsenring and Fior: J. Nutrition **5**:141, 1932	4 children aged 35 to 56 months			
	20 experimental days	3.25	2.07	+1.19
	20 experimental days	6.50	3.29	+3.21
Daniels and Wright, ibid. **8**:125, 1934	8 children aged 3 to 6 years; 80 experimental days	10.89	7.81	+3.08
Macy: Nutrition and Chemical Growth in Childhood, Springfield, Ill., Charles C Thomas, 1942, vol. 1, Evaluation	Children aged: 4	7.95	7.07	+0.88
	5	7.75	7.13	+0.62
	6	8.17	7.98	+0.19
	8	8.53	7.04	+1.14
	9	11.16	8.68	+2.48
	10	11.80	8.68	+3.12
	12	12.18	9.19	+2.99
Farrar and Goldhamer: J. Nutrition **10**:241, 1935	Normal man	5.2	5.4	—0.2
	Normal man	7.7	7.8	—0.1
	Man; minimal tuberculosis	7.3	7.4	—0.1
	Normal woman	8.3	8.2	+0.1
Beznikoff, Toscani and Fullarton*	Middle aged man, recovered from deficiency syndrome; 132 experimental days	18.4	12.8	+5.6
Ohlsen and Daum: J. Nutrition **9**:75, 1935	3 normal women; 56 experimental days	13.78	14.95	—1.17
Leverton and Roberts, ibid. **13**:65, 1937	4 normal women; 440 experimental days	11.81	11.12	+0.69*
Lintzel: Ztschr. f. Biol. **89**:342, 1929	Normal men: (1) 16 experimental days	58.5	58.2	+0.3
	(2) 49 experimental days	12.7	12.8	—0.1
	(3) 16 experimental days	2.5	2.4	+0.1
	(4) 3 experimental days	0.9	0.9	0.0
Coons: J. Biol. Chem. **97**:215, 1932	9 women, from eleventh week of pregnancy to term	14.72	11.56	+3.16
Lehmann, Mueller, Munk and Senator: Virchows Arch. f. path. Anat. **131**, supp. 1, 1893	Stool examinations on two fasting men:			
	(1) Cetti, 10 days	0	7.3	—7.3
	(2) Breithaupt, 6 days	0	8.0	—8.0

* After blood loss from menses and venesection was taken into consideration, the subjects were approximately in iron balance.

10. Fontès, G., and Thivelle, L.: Bilan du fer chez le chien rendu anémique par saignées repetées, Comptes rend. Soc. de biol. **109**:911, 1932. Moore, C. V.; Roberts, H. R., and Minnick, Virginia: A Study of the Selective Absorption of Iron with the Aid of Its Radioactive Isotope, J. Clin. Investigation **20**:436-437 (July) 1941. Ross, J. F., and Chapin, M. A.: The Selective Absorption of Radioactive Iron by Normal and Iron Deficient Human Subjects, ibid. **20**:435 (July) 1941.

11. Hahn, P. F.: The Metabolism of Iron, Medicine **16**:249-266 (Sept.) 1937. Hahn, P. F.; Bale, W. F.; Lawrence, E. O., and Shipple, G. H.: Radioactive Iron and Its Metabolism in Anemia: Its Absorption, Transportation and Utilization, J. Exper. Med. **69**:739 (May) 1939. Arrowsmith, W. R., and Minnich, Virginia: Site of Absorption of Iron from the Gastrointestinal Tract, J. A. M. A. **116**:2427 (May 24) 1941.

12. Sherman, H. C.: Chemistry of Food and Nutrition, ed. 5, New York, Macmillan Company, 1937.

13. Recommended Daily Allowances for Specific Nutrients, J. A. M. A. **116**:2601 (June 7) 1941.

14. In any anemic state there is a diminution of the gross amount of circulating hemoglobin and also of the circulating iron. This does not mean that iron deficiency is present in all kinds of anemia. In pernicious anemia, for example, there is usually an adequate amount of stored iron which is available for blood formation when liver extract (without iron) is given.

times gastrointestinal disturbances such as diarrhea, achlorhydria or intestinal disease interfering with absorption will prevent iron from entering the body, even though the diet has supposedly adequate amounts of iron. When this is the case an individual may maintain a low hemoglobin level for many years. The administration of large doses of inorganic iron in such cases will practically always relieve the anemia.

Tables 3 and 4 give the estimated annual iron requirements for physiologic needs of males and females and the data from which these requirements are derived. The sources for the changes of growth, blood volume and hemoglobin values with age and sex have been described in the original publication of the tables.[15] A somewhat similar analysis of the growth requirement for iron has been reported by the White House Conference on Child Health and Protection.[16] The figures in that report are somewhat higher, being based on the total iron content of the body. Tables 3 and 4 show that iron requirements are greatest in infancy and early childhood and about the age of puberty, and they are larger in females than males after puberty and are increased during pregnancy. At these times and under these conditions iron deficiency is seen most commonly, if we except cases of pathologic blood loss. This supports the assumption which has been made that, if physiologic needs for iron are not supplied, iron deficiency anemia will occur.

Since the physiologic factors which favor iron deficiency are universal, as well as blood loss from wounds or lesions of disease, there can be no purely geographic distribution of iron deficiency. There are, however, environmental factors which may render iron deficiency more common in certain locations. The anemia associated with hookworm infection is an anemia of iron deficiency and is found in tropical and subtropical climates. Customs restricting the activities of women, such as those of certain sects of India, may interfere in various ways with the intake of food iron. It is probable that Victorian influences circumscribing the activities of women were in part responsible for the high incidence of "chlorosis" in the past century.[17]

TABLE 2.—*Recommended Daily Allowance for Iron*
(Committee on Food and Nutrition, National Research Council)

	Iron, Mg.
Children under 1 year	6
Children 1-3 years	7
Children 4-6 years	8
Children 7-9 years	10
Children 10-12 years	12
Girls 13-15 years	15
Girls 16-20 years	15
Boys 13-15 years	15
Boys 16-20 years	15
Women, nonpregnant	12
Women, pregnant	15
Men	12

Anemia, achlorhydria and intestinal disorders appear to be more common in parts of the Scandinavian countries, England, and Scotland and North America, although hereditary influences as well as dietary customs among Nordic peoples may play a role. It is estimated that iron deficiency is present in at least 16 per cent of the female patients entering the general medical wards of the Boston City Hospital. In an extensive study of individuals belonging to the poorest classes of northeast Scotland, Davidson, Fullerton and Campbell[18] found anemia believed to be iron deficiency in 41 per cent of infants under 2 years, 32 per cent of preschool children, 2 per cent of school children, 16 per cent of adolescent women and 45 per cent of adult women. MacKay[19] reported also an extremely high incidence of iron deficiency anemia in women and infants of the hospital class in London. MacKay[20] also presented evidence indicating that anemia of iron deficiency was associated with a higher incidence of infections. Dietary and hygienic factors will influence the incidence of iron deficiency as well as of other deficiency states in any one locality or at any one time. Cases of iron deficiency, on the other hand, will be present everywhere and at all times as long as pathologic blood loss and other factors interfering with normal physiology of iron exist.

TABLE 3.—*Estimated Iron Requirements for Growth: Males*

Age, Years	Weight, Kg.	Surface Area, Sq. M.	Total Blood Volume, Cc.	Normal Hemoglobin, Gm. per 100 Cc.	Total Circulating Hemoglobin, Gm.	Annual Gain Circulating Iron, Gm.	Annual Gain Extracirculating Iron, Gm.	Total Annual Requirement of Iron, Gm.
Birth	3.4	0.226	260	19.46	50.6			
						0.158	0.007	0.195
1	10.9	0.521	818	11.87	97.1			
						0.060	0.013	0.112
2	13.4	0.598	1,017	12.42	126.5			
						0.071	0.009	0.080
3	15.3	0.665	1,184	12.42	147.1			
						0.082	0.010	0.092
4	17.3	0.749	1,378	12.42	171.1			
						0.086	0.012	0.098
5	19.6	0.816	1,550	12.68	196.5			
						0.066	0.013	0.079
6	22.2	0.884	1,680	12.85	215.9			
						0.068	0.012	0.080
7	24.6	0.948	1,801	13.11	236.1			
						0.054	0.016	0.070
8	27.9	1.011	1,921	13.11	251.8			
						0.057	0.015	0.072
9	30.9	1.078	2,048	13.11	268.5			
						0.134	0.018	0.152
10	34.5	1.168	2,348	13.11	307.8			
						0.114	0.016	0.130
11	37.6	1.240	2,604	13.11	341.4			
						0.122	0.015	0.137
12	40.7	1.308	2,878	13.11	377.3			
						0.168	0.021	0.189
13	44.8	1.401	3,255	13.11	426.7			
						0.176	0.022	0.198
14	49.3	1.502	3,650	13.11	478.5			
						0.280	0.034	0.314
15	56.0	1.621	4,134	13.57	561.0			
						0.290	0.023	0.313
16	60.6	1.706	4,606	14.03	646.2			
						0.235	0.018	0.253
17	64.3	1.772	5,139	14.49	744.6			
						0.174	0.009	0.183
18	66.1	1.801	5,460	14.49	795.9			
						0.143	0.006	0.149
19	67.2	1.813	5,785	14.49	828.0			
						0.081	0	0.081
20	67.2	1.813	5,947	14.49	861.7			
						0.071	0	0.071
21	....	1.813	6,092	14.49	882.7			
						0.071	0	0
22	....	1.813	6,092	14.49	882.7			
						0.071	0	0
23	....	1.813	6,092	14.49	882.7			
Total requirement: Birth to 21 years								3.148

REQUIREMENTS FOR COPPER AND OTHER METALS

The important change in the body when there is a deficiency of iron is an inability to form hemoglobin. There are undoubtedly other widespread changes in the body, examples being the dystrophy of the nails and the atrophy of the pharyngeal mucous membrane in severe chronic iron deficiency, but these are less well understood. Iron forms an essential part of the hemoglobin molecule, which is a protein in which a large molecule, globin, is linked with a smaller iron-

15. Heath and Patek,[1] pp. 278-283.

16. Growth and Development of the Child: Part III. Nutrition (White House Conference on Child Health and Protection), New York & London, Century Company, 1932.

17. Davidson, L. S. P., and Leitch, I.: The Nutritional Anemias of Man and Animals, Nutrition Abstr. & Rev. **2**: 193, 1934. Heath, C. W.: Iron Deficiency in Girls: Chlorosis, M. Clin. North America **21**: 389, 1937. Olef, I.: Chlorosis, New England J. Med. **225**: 358, 1941.

18. Davidson, L. S. P.; Fullerton, H. W., and Campbell, R. M.: Nutritional Iron Deficiency Anemia, Brit. M. J. **2**: 195, 1935.

19. MacKay, Helen M. M.: Nutritional Anemia in Infancy, J. A. M. A. **98**: 631 (Feb. 20) 1932 (London Letters); The Hemoglobin Level Among London Mothers of the Hospital Class and Its Probable Bearing on Susceptibility to Infection, Lancet **1**: 1431, 1935.

20. MacKay, Helen M. M., and Goodfellow, L.: Nutritional Anemia in Infancy: The Influence of Iron Deficiency on Infant Health, Medical Research Council, Special Report Series, No. 157, London, 1931. MacKay (footnote 19, second reference).

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containing molecule, hematin. In the absence of available iron, therefore, hemoglobin cannot be formed. Nevertheless there are a number of other substances which in the presence of iron have been shown to influence hemoglobin production. Whipple and his co-workers have been able to arrange certain foodstuffs, among them liver, according to their power of regenerating hemoglobin in dogs rendered chronically anemic by repeated bleeding and maintained on a diet poor in hemoglobin-regenerating factors. Bile pigment, chlorophyll and chlorophyll derivatives are effective when added to small doses of iron in increasing blood regeneration in iron deficiency. Copper has attracted particular attention as an adjuvant to iron therapy, because it has been proved quite definitely that copper is a necessary substance for hemoglobin formation, at least in small animals.[21] Copper, however, does not form a part of the hemoglobin molecule, and although it is an essential element in human tissues its functions are little understood. Iron deficiency anemia in adult man apparently responds satisfactorily to iron therapy without supplementary copper feeding. This is not proof that copper isn't needed, but only that supplementary copper is not necessary. The issue is clouded by the fact that iron preparations used in therapy as well as most foods contain small amounts of copper. A few cases of iron deficiency in man have been treated satisfactorily with copper-free iron. Iron given parenterally in small amounts has been recovered quantitatively in the new-formed hemoglobin.[22] Hemoglobin formation in certain cases of childhood anemia has apparently been hastened by supplementing iron therapy with copper,[23] although these results have not been conclusive and the thesis that supplementary copper is necessary in the treatment of iron deficiency in childhood has not been supported by others.[24] Other metals, such as arsenic, zinc, nickel and manganese in very minute amounts, perhaps have a similar influence to copper.[25] Man derives his variegated food from widely different locations, and even much limited diets may contain significant amounts of elements which are present in the body in minute amounts. This is not true of laboratory animals on controlled diets or in the cattle and sheep industry in certain parts of the world. A case in point is the peculiar anemia of cattle and sheep which graze on land the soil of which is poor in certain minerals. This has been investigated by Filmer and Underwood [26] in Australia, who found that cobalt is apparently the specific element which is deficient. It is extremely unlikely that specific deficiencies of these minerals other than iron, which are required by the body in minute amounts, will develop in man. The possible exception to this is the case of infants fed on cow's milk exclusively during the first year of life.

21. Elvehjem, C. A.: The Biological Significance of Copper and Its Relation to Iron Metabolism, Physiol. Rev. **15**: 471, 1935. Elvehjem, C. A., and Sherman, W. C.: The Action of Copper in Iron Metabolism, J. Biol. Chem. **98**: 309, 1932. Frost, D. V.; Potter, V. R.; Elvehjem, C. A., and Hart, E. B.: Iron and Copper versus Liver in Treatment of Hemorrhagic Anemia in Dogs on Milk Diets, J. Nutrition **19**: 207, 1940.

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23. Josephs, H. W.: Treatment of Anemia of Infancy with Iron and Copper, Bull. Johns Hopkins Hosp. **49**: 246, 1931.

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25. Myers, V. C., and Beard, H. H.: Studies in the Nutritional Anemia of the Rat: II., J. Biol. Chem. **94**: 89, 1931.

26. Filmer, J. F.: Enzootic Marasmus of Cattle and Sheep, Australian Veterinary J., **9**: 163, 1933. Filmer, J. F., and Underwood, E. J.: Enzootic Marasmus: Treatment with Limonite Fractions, ibid. **10**: 83, 1934. Underwood, E. J., and Filmer, J. F.: Enzootic Marasmus: The Determination of the Biologically Potent Element (Cobalt) in Limonite, ibid. **11**: 84, 1935.

RECOMMENDATIONS FOR SATISFYING NUTRITIONAL REQUIREMENTS FOR IRON AND OTHER METALS

Iron is widely distributed throughout nature and is probably present in all cells both plant and animal, where it serves an essential use in cellular function.[27] The more processed and purified foods consumed by man (e. g. cane sugar, white flour, polished rice) contain less iron as well as other accessory food substances than the cruder products. A diet containing adequate amounts of iron and other minerals should therefore be rich in animal and vegetable cells, should be broadly chosen and should have no excess of highly processed foods. Presumably, if the iron content of the diet is satisfied the content of copper, cobalt, and manganese will be satisfied. Iron deficiency anemia itself, which can and often does arise in spite of adequate iron in the food, is easily treated by the administration of adequate doses of inorganic iron preparations, for example ferrous sulfate 0.3 Gm. (or more) three or four times daily, ferric and ammonium citrate 2 Gm. (or more) three times daily or reduced iron 1 Gm. (or more) three times daily. Smaller doses are given in infancy and childhood. Iron may be properly given as a preventive against the later occurrence of iron deficiency during pregnancy, in infancy and early childhood and in girlhood about the time of puberty.

TABLE 4.—*Estimated Iron Requirements for Growth of Females, Menstruation and Pregnancy*

Age, Years	Weight, Kg.	Surface Area, Sq. M.	Total Blood Volume, Cc.	"Normal" Hemoglobin, Gm. per 100 Cc.	Total Circulating Hemoglobin, Gm.	Annual Gain Circulating Iron, Gm.	Annual Gain Extracirculating Iron, Gm.	Annual Loss of Iron by Catamenia, Gm.	Total Annual Requirement or Iron, Gm.
Birth	3.36	0.222	255	19.46	49.6				
						0.148	0.034	0	0.182
1	10.2	0.500	785	11.87	93.2				
						0.100	0.012	0	0.112
2	12.5	0.581	988	12.42	122.7				
						0.079	0.013	0	0.092
3	15.1	0.660	1,175	12.42	145.9				
						0.068	0.012	0	0.080
4	17.4	0.726	1,136	12.42	165.9				
						0.077	0.010	0	0.087
5	19.5	0.782	1,486	12.68	188.4				
						0.091	0.015	0	0.106
6	22.4	0.852	1,676	12.85	215.4				
						0.065	0.013	0	0.078
7	25.1	0.941	1,788	13.11	234.4				
						0.053	0.014	0	0.067
8	27.9	1.001	1,908	13.11	250.1				
						0.088	0.020	0	0.108
9	31.8	1.079	2,104	13.11	275.8				
						0.103	0.017	0	0.120
10	35.2	1.162	2,336	13.11	306.2				
						0.143	0.020	0	0.163
11	39.2	1.265	2,657	13.11	348.3				
						0.142	0.022	0	0.164
12	43.7	1.352	2,974	13.11	389.9				
						0.171	0.021	0	0.192
13	47.9	1.448	3,359	13.11	440.4				
						0.131	0.014	0	0.145
14	50.7	1.508	3,652	13.11	478.8				
						0.151	0.019	0.298	0.468
15	54.5	1.565	3,991	13.11	523.2				
						0.129	0.006	0.298	0.424
16	55.7	1.578	4,261	13.11	558.6				
						0.193	0.007	0.298	0.498
17	57.0	1.601	4,643	13.25	615.2				
						0.135	0.002	0.298	0.435
18	57.4	1.605	4,805	13.38	655.0				
						0.150	0.004	0.298	0.452
19	58.2	1.621	5,171	13.52	699.1				
						0.067	0	0.298	0.365
20	....	1.621	5,317	13.52	718.9				
						0.060	0	0.298	0.358
21	....	1.621	5,447	13.52	736.4				
						0	0	0.298	0.298
22	....	1.621	5,447	13.52	736.4				
						0	0	0.298	0.298
23	....	1.621	5,447	13.52	736.4				
						0	0	0.298	0.298
24	....	1.621	5,447	13.52	736.4				
						0.374*	0	0	0.374
25	....	1.621	5,447	13.52	736.4				
						0	0	0.298	0.298
26	....	1.621	5,447	13.52	736.4				
Total requirement: Birth to 21 years.....									4,696

* Estimated iron requirement for pregnancy.

27. Jones, H. W.: The Distribution of Inorganic Iron in Plant and Animal Tissues, Biochem. J. **14**: 654, 1920.

In table 2 have been given the recommended daily allowances for iron in the diets of children, men and women as recommended by the Committee on Food and Nutrition. These figures are very much greater than the actual physiologic needs of the body for functioning iron, but only a part, usually a very small part, of the iron of the food is absorbed. A well chosen diet, adequate in calories and containing meat, eggs, colored vegetables and whole grain flour, will satisfy or even exceed these requirements. Although such diets would certainly be adequate for all healthy, active men, particularly those in the armed forces, they would be less likely to satisfy the needs of all the civilians, particularly women and children. There is therefore some justification for the proposals to add iron salts to flour for civilian consumption. This is perhaps especially justified because of our lack of knowledge of the availability of iron from various foods. Iron in different organic combinations in foods certainly varies in the ease with which it may be liberated by the digestive process for absorption. No satisfactory test has yet been made for determining the availability for man of the iron in different foods. The dipyridyl method has been of some accuracy in determining iron of the food available for rats.[28] Probably different individuals will vary greatly in their ability to absorb different kinds of food iron. The accompanying foods, the state of the gastrointestinal tract and the need of the body for iron and other metals will all influence the amount of iron absorbed from a particular food.

The Council on Foods and Nutrition of the American Medical Association has discussed adequately the enriching of flour with mineral and vitamin supplements.[29] The problem as regards iron is that of the choice of iron preparation, the ease and efficiency of mixing, palatability, the availability of the iron and its possible detrimental effect on other constituents of the enriched flour. Obviously, the questions which this subject raises cannot all be answered even in the near future. It is fairly certain, however, that iron as a simple iron salt added to flour will be more available than the iron in close organic combination in the original flour. There is some indication, on the other hand, that iron salts mixed with other substances before feeding are less available for absorption than when fed alone.[30] There has also been demonstrated a relationship between the utilization of iron and the amounts of calcium and phosphorus in the diet [31] and other interrelationships will undoubtedly be established. At the present time it would appear that if whole grain flours were widely used, and the advantages of a widely chosen and adequate diet were promulgated, nutritional requirements for iron and other minerals would be adequately supplied. On the other hand, there is no definite indication that harm would result from the addition of small amounts of iron salts to flour. There is no more useful field in nutritional research at the present time than the exploration of the adequacy and inadequacy of different foods and enriched foods in supplying substances necessary to the health of man.

28. Elvehjem, C. A.; Hart, E. B., and Sherman, W. C.: The Availability of Iron from Different Sources for Hemoglobin Formation, J. Biol. Chem. **103**: 61, 1933.

29. Nutritionally Improved or Enriched Flour and Bread, J. A. M. A. **116**: 2849 (June 28) 1941.

30. Heath, C. W.; Minot, G. R.; Pohle, F. J., and Alsted, G.: The Influence of Mucin on the Absorption of Iron in Hypochromic Anemia, Am. J. M. Sc. **193**: 281 (March) 1938.

31. Anderson, H. D.; McDonough, K. B., and Elvehjem, C. A.: Relation of Dietary Calcium Phosphorus Ratio to Iron Assimilation, J. Lab. & Clin. Med. **25**: 464, 1940.

HEALTH ASPECTS FOR FUEL RATIONING

Donald M. Nelson, chairman of the War Production Board, on recommendation of the Fuel Oil Committee, has announced that deliveries of fuel oil will be curtailed on the Atlantic Seaboard and in thirteen Middle Western states during the coming heating season. These thirty states and the District of Columbia represent a population of more than 96,000,000 persons, but it is estimated that only about 3,140,000 oil burners exist in these states, so that the population affected is somewhat smaller than appears at first glance. A coupon rationing system has been authorized which will be administered by the Office of Price Administration. Operators of oil burners in households and apartments are strongly advised to convert oil burners to coal immediately whenever possible and not to rely on either electric or gas heating units, since both electricity and gas may be short at different times and places. The necessity for rationing fuel in the Middle West has arisen from the shortage of tankers and from the fact that oil can be drawn from producing states in the Middle West and delivered to the Eastern Seaboard to relieve the shortage there with shorter hauls than from more remote oil fields. Rationing may reduce normal winter use as much as 33⅓ per cent; a severe winter may increase this reduction and a mild winter may ease the situation. Storm sashes, weather stripping, burner cleaning, soot elimination and improvements and adjustments of installations to cut the usual consumption of heating fuels are strongly recommended.

Supplementary rations above the average are planned for the protection of those of tender age, advanced age, the sick and those with low vitality, but Mr. Nelson warns that where conversion from oil to coal has been possible and has not been carried out, supplementary fuel rations will be denied.

The health aspects of fuel rationing, as worked out by medical, public health and ventilating experts, are embodied in a report submitted to the Advisory Committee, Fuel Rationing Division, U. S. Office of Price Administration, by a subcommittee headed by Leverett D. Bristol, M.D., Dr.P.H., New York. An abstract of the report of Dr. Bristol's subcommittee follows:

MEDICAL AND PUBLIC HEALTH ASPECTS OF HEATING OIL RATIONING

Physicians, engineers and public health workers are accustomed to think of indoor heating and ventilation in terms of a "comfort" zone. We may have to reorganize peacetime procedures in the direction of a "discomfort" zone. Health should not be jeopardized; any rationing plan adopted should be based on equality for all, with special consideration for those of tender or advanced age, or those with actual disease or lowered vitality. Any plan must be preceded and followed through by an intelligent and extensive educational program directed by some federal agency in Washington, with whatever medical or public health assistance or leadership may be required. Centralized medical or public health advisory relationships will be of great help with state and local groups as well as at the federal level. A suggested slogan based on a popular song of the first world war is "Keep the Home Fires Burning—*Low!*"

In the past we have erred on the side of too high temperatures and too dry atmospheres. Temperatures

must be kept down, but we must not err at the other extreme so that severe chilling and possible sickness may result. While most of our winter ills are due to bacterial and virus infections, scientific evidence shows the important relationship of lowered resistances and changes of weather to these conditions. There is little experimental evidence to show what an individual in a wartime economy can get along without in his artificial heat requirements without injury to health.

Ventilation is not so much a matter of what we breathe in through our lungs as it is of how our skin and body react. It is more of a cutaneous than a respiratory problem. It is more immediately important to ventilate in the interest of the heat regulating mechanism of the body.

An ideal temperature, irrespective of humidity and air motion, does not exist, nor does a safe minimum temperature exist without these influencing factors. The following, without regard to other factors, may be considered minimum temperatures for emergency requirements of fuel oil rationing:

(*a*) For the average private home, 60-68 F. (majority opinion 65 F.).

(*b*) For the average apartment house, 60-68 F. (majority opinion 65 F.).[1]

(*c*) For hospitals and sanatoriums, 68-80 F. (majority opinion 70 F. except operating rooms 80 F.).

(*d*) For schools, 60-70 F. (majority opinion 65 F.).[1]

(*e*) For department stores, office buildings, and so on, 60-68 F. (majority opinion 65 F.).[1]

Indoor temperatures of dwelling places, hospitals, schools, stores and offices must vary according to the conditions and activities of occupants and the specific uses to which various rooms are put. All industries should carefully scrutinize their heating and ventilating equipment and practices to the end that winter indoor heating temperatures may be kept at the lowest possible point consistent with the efficiency of the workers.

Temperatures for department stores, it has been suggested, might be as low as 50 to 60 F. dry bulb, except for the office spaces, since customers are usually dressed for outside weather and clerks could dress appropriately. For general hospital wards a minimum of 65 F. and for ambulatory patients 70 F. has also been suggested. Operating rooms and nurseries require higher temperatures. Consensus of authority seems to be that tuberculous patients should be treated at about the same temperatures as other hospital patients.

Thermostats should be properly adjusted and reconditioned and should be subject to the supervision and manipulation of one rather than several persons. Simple daily records of indoor temperatures should be kept even by households.

To offset reduction of customarily recommended indoor temperatures of 68 to 70 F., insulation and weather stripping are recommended. Humidification, however, in homes is regarded as relatively unimportant on the basis of recent investigations. At temperatures of 65 F. or less, artificial humidification in the home is generally not necessary because laundry, bathing and living activities will result in adequate humidity for normally healthy people. Artificial humidification need be undertaken only on the specific suggestion of a physician.

1. Subject to local regulations or codes.

Little or no attempt should be made to heat bedrooms, except those occupied by infants, aged persons or those who are ill. Bedroom temperatures may be from 50 to 60 F. The bathroom should be kept warm and a schedule set up for dressing and undressing in the bathroom. Warm night clothes and bed coverings should be provided. Living rooms should be kept at a suitable temperature at the expense of the dining room, halls and kitchen. The temperature should be lowered to 50 F. at night and local heat sources should be utilized. Drafts from windows, doors and fireplaces should be minimized by keeping windows and doors closed. Pulling down window shades at night screens the cold blast from the rest of the room.

Reduced indoor temperature is less apt to injure persons in good physical condition and having good health habits. The usual recommendations relative to exercise, sunlight, food and rest are stressed. Adequate clothing, and especially foot covering, is emphasized. Cold baths of short duration are recommended for certain persons. Overfatigue should be avoided.

Indoor comfort and health depend on individual adjustments of clothing as much as on proper heating and ventilation. Double comfort standards between men and women are due largely to differences in dress or clothing. The application of this knowledge to individual situations would do much to prevent dissatisfaction and possible ill effects of cooler indoor temperatures and drafts during the winter. Every individual should be brought to realize that he is his own clothing engineer and that a heavier dress or suit, an extra undergarment or overgarment may do much toward winter health and comfort in overcool rooms. "Wear a sweater and help win the war!" The body adjusts itself readily to temperatures at least 10 degrees below what we in the United States consider the standard temperatures for dwelling houses. The English, based on experience with radiant heat, believe that a 60 F. dry bulb temperature is adequate if room occupants are properly clothed.

Where coal or gas stoves or heaters are used the dangers of possible asphyxiation, poisoning and fire accidents are pointed out.

Fuel rationing must take into consideration the need for hot water, if heated by oil, especially in the household where bathing and the sanitary washing of dishes and other utensils used in common must be carried out.

Dish washing devices for hand washing require a temperature of 110 to 120 F., a temperature which can be withstood by the hands. Utensils should be rinsed in hot water of not less than 170 F., according to most local codes. The pouring of boiling water over washed utensils is not adequate for disinfecting purposes unless done over a period of at least one minute. In place of hot water for disinfecting purposes a warm chlorine solution (100 to 200 parts per million) may be used, about the same time period as mentioned being observed. In machine washing the temperature of the soapy wash and the rinse water should not be less than 170 to 180 F. for two minutes, or exposure to live steam in a closed compartment for at least five minutes.

Supplemental fuel oil should be allowed to homes in which there are children under 4 years of age, for whom a temperature of not less than 70 F. should be provided.

This would also take care of the needs of the nursing mother. After the fourth birthday, normal children need a cooler and not a warmer environment than adults. Older people, particularly those of lowered vitality, should have a temperature of not less than 70 and possibly as much as 74 F. Consideration should be given to individual differences; some people are "old" at 55, others are "young" at 70. In general, supplemental rations should be made available for homes with 1 or more occupants over 65. Where there are 1 or more cases of acute or chronic illness or invalidism, the physician should be the judge of the need for supplementary fuel oil rations.

The physician's place in administration and certification would consist in certifying to the ration board for the supplemental fuel oil rations for cases involving actual needs arising out of sickness and the infirmities of old age or other special cases. It might be desirable to have a local physician as a consultant or adviser to local ration boards. Consideration should be given to possible periods of abnormally cold weather and the possible occurrence of epidemics or threatened epidemics of disease and to communities which may accurately be described as health resorts.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

GOSZTONYI (MODEL "D") ULTRAVIOLET APPLICATOR ACCEPTABLE

Manufacturer: Ultra Rays, 1166 Highland Road, Sharon, Pa.

The Gosztonyi Lamp is essentially a low vapor-pressure "cold" mercury arc in a fused quartz burner shaped for contact application of ultraviolet radiation, principally of the wave band 2,537 angstroms. About 93 per cent of the total ultraviolet output is in the wave band 2,537 angstroms, according to evidence submitted by the firm. The D shaped burner is of quartz tubing about 15 mm. in diameter, the straight side of which may be rubbed over or held close to the infected area. The applicator operates on 30 milliamperes in the tube and consumes about 40 watts from 110 volts, 60 cycle alternating current lines. The output of the short ultraviolet measured at 6 inches from the burner (D shaped applicator operating on the highest intensity step) was found by the firm's investigator to be 422 microwatts per square centimeter.

Gosztonyi Model "D" Ultraviolet Applicator.

The generator for the apparatus is contained in a carrying case. On the instrument panel are an "off-on" switch, a three stage rheostat and plugs for attaching the applicator. The device is arranged for use with an automatic timer.

In the Council's investigation of the device, radiometric measurements were made on the ultraviolet output of wave length 2,537 angstroms at a distance of 15 cm. (6 inches) from the front edge of the straight side of the D shaped burner. The lamp was operated on 110 volts alternating current 60 cycles; on the three rheostat settings ("1, 2, 3") or approximately 10, 20 and 30 milliamperes. The corresponding ultraviolet intensities were 68, 125 and 175 microwatts per square centimeter. The latter value is somewhat lower than that (422 microwatts per square centimeter) reported by the firm. However, this difference is to be expected owing to the difficulty in specifying the operating distance of the D shaped burner. The calculated intensity at the line of contact with the straight side of the D shaped burner would be much higher than the value (4,100 microwatts per square centimeter) given by the firm. This form of lamp therefore meets the Council's requirements for acceptance.

The Council voted to accept the Gosztonyi Model "D" Ultraviolet Applicator for inclusion on its list of accepted devices.

ALOE SHORT WAVE DIATHERMY UNIT COMMANDER MODEL ACCEPTABLE

Manufacturer: A. S. Aloe Company, 1819 Olive Street, St. Louis.

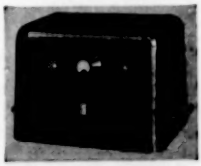
The Aloe Short Wave Unit, Commander Model, is designed for use in medical diathermy and in minor electrosurgery. It is equipped with line cord, two rectifier tubes, two power tubes, two 8 by 10 inch pad type electrodes and induction cable. The unit operates on alternating current, 110 to 125 volts.

In the Council's tests of the instruments' physical characteristics the following results were obtained:

Electromotive force	115 volts
Power input	650 watts
Power output	205 watts

The final transformer temperature was within the limits prescribed by the Council.

The firm submitted evidence to support the ability of the unit to generate heat deep within the tissues. In the cuff technic the electrodes were made of a stiff resilient metal so that they embraced the thigh with a springlike action. The dimensions were 2¼ by 25 inches (upper cuff) and 2¾ by 18½ inches (lower cuff). The metal strip used in the electrodes was 1½ inches wide. The average distance between cuffs was: right, 7¾ inches; left, 7½ inches. Average spacing was: right, 1 inch; left, ⅞ inch. Room temperature was 74 F.; humidity was about 42 per cent.


Aloe Short Wave Diathermy Unit, Commander Model.

When the coil technic was tested, the distance between coils was approximately 1 inch. About one-half inch of spacing was used to separate the coil from the skin. The average thigh circumference was about 19¼ inches. The room temperature was approximately 75 F.; the humidity was around 48 per cent.

Average Temperatures of Six Observations

	Deep Muscle		Rectal	
	Initial	Final	Initial	Final
Cuff Technic	97.3	107.3	99.0	99.2
Coil Technic	98.7	105.7	99.7	99.8

The apparatus was tried out clinically by a qualified investigator, who reported that it gave satisfaction when used for cuff and coil technic.

The Council on Physical Therapy voted to accept the Aloe Short Wave Diathermy Unit, Commander Model, for inclusion on its list of accepted devices.

BORG PRONE PRESSURE TIMING DEVICE
(For Instruction in Manual Resuscitation)
ACCEPTABLE

Manufacturer: The Borg-Erickson Corporation, 496 East Ohio Street, Chicago.

The Borg Prone Pressure Timing Device is a small platform scale measuring 10 by 8 by 2½ inches designed for use in instruction of the prone pressure method of resuscitation. Although this device, as a scale, does not come strictly within the Council's purview as a therapeutic or diagnostic instrument, the Council is of the opinion that consideration should be given to it because of its value as a training apparatus for the manual method of artificial respiration.

The manufacturer makes the following statement: First, distinguishing red marks on the dial face indicate both the pressure (35 to 45 pounds) and Schafer's suggested (Red Cross First Aid Handbook, page 113) maximum limit (60 pounds). Second, the oscillating cycle (return to stabilized zero point) of the unit is so constructed that when the hands are removed from the platform the time required for this operation is practically the best required for proper pressure application (Red Cross First Aid Handbook, page 110, paragraph 5).

The manufacturer of this device recommends the following method for training: Place the scale on the floor at approximately 8 inches from the surface (using books or a fixture to achieve the proper height), then have the trainee assume the proper position for prone pressure application. The trainee is then to simulate the motions of the applications, using the platform as a substitute for the patient. After several demonstrations of this kind the trainee may apply the same rhythm and force on the subject. A torso-replica made of paper-mache may be used if desired.

Borg Prone Pressure Timing Device.

In the Council's examination of the apparatus it was found to be a neatly constructed platform scale. The dial is divided to read to 250 pounds weight or force exerted against the platform. It is sensitive to less than ½ pound and will register the same reading to a weight placed at any point on the platform. It is accurate to ± 1 pound.

When placed at a height corresponding to body thickness and pressure exerted against it, the instrument will register the maximum pressure applied at any given point. The dial is marked with two red stripes, the narrower with the midpoint at 25 pounds and the wider with the midpoint of 50 pounds. These mark the minimal and maximal pressure recommended for the Schafer prone pressure method of artificial respiration, and the limits correspond very closely to requirements of the Red Cross First Aid Handbook.

The device was tested by the students in the medical clas..es of an educational institution and by five members of the staff of the department of physiology. Among these were eight men who had taken Red Cross first aid class instruction, and without exception every one found that he had exerted pressure far in excess of the prescribed maximum, to the effect that several of the subjects were tender for several days.

To say, however, that 60 pounds pressure is the upper limit necessary or that 30 pounds would never do harm is quite impossible in the light of available evidence. Certain subjects with certain anatomic and pathologic variations may have little or no exchange when 60 pounds pressure is applied. Likewise a pressure of 30 pounds applied injudiciously to some slightly built individuals might conceivably fracture ribs or injure viscera. The proper pressure is enough to cause adequate exchange of air and will always be an individual consideration.

This apparatus, in the opinion of the Council, serves as a valuable training device not only in demonstrating the adequate pressure to apply but in teaching the proper concept of the rhythm and timing. The Council believes, therefore, that it will convey to the trainee somewhere near the idea of forces and timing likely to be needed under practical conditions.

The Council voted to accept the Borg Prone Pressure Timing Device for inclusion in its list of accepted devices, provided all advertising for the apparatus is submitted to the Council for examination, that the advertising promotes the device only as an instrument for instruction of the prone pressure method of artificial respiration and that the Council seal or notice of acceptance must not appear on the scale or in the advertising for it when the instrument is promoted for uses other than as a training aid. The device is not accepted as a conventional scale for weighing purposes, nor does the Council give consideration to devices for weighing.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Acting Secretary.

LIVER AND STOMACH PREPARATIONS (See New and Nonofficial Remedies, 1941, p. 328).

The following preparations of Purified Solution of Liver U. S. P. XI for parenteral administration have been accepted:
GEORGE A. BREON & COMPANY, INC., KANSAS CITY, MO.

Purified Solution of Liver, 10 U. S. P. Units per cc.: 5 cc. and 30 cc. vials. A sterile aqueous purified solution of liver preserved with 0.5 per cent phenol.

Purified Solution of Liver, 5 U. S. P. Units per cc.: 10 cc. vial. A sterile aqueous purified solution of liver preserved with 0.5 per cent phenol.

Ampul Purified Solution of Liver, 2.5 U. S. P. Units per cc.: 2 cc. A sterile aqueous purified solution of liver preserved with 0.5 per cent phenol, prepared by dilution of the 5 unit extract with an equal volume of sterile redistilled water.

DEXTROSE (See New and Nonofficial Remedies, 1941, p. 179).
PARKE, DAVIS & CO., DETROIT.

Glaseptic Ampoule Solution Dextrose 50% W/V: 10 Gm. in 20 cc.; 25 Gm. in 50 cc.; and 50 Gm. in 100 cc. A solution of dextrose 50 per cent W/V in distilled water.

THEOPHYLLINE WITH ETHYLENEDIAMINE-U. S. P. (See New and Nonofficial Remedies, 1941, p. 583).
The following dosage forms have been accepted:
THE SMITH-DORSEY COMPANY, INC., LINCOLN, NEB.

Tablets Aminophyllin: 0.2 Gm. (3 grains).

Ampoule Solution Aminophyllin: 0.5 Gm. (7.72 grains) in 20 cc.

PYRIDOXINE HYDROCHLORIDE (See THE JOURNAL, Jan. 10, 1942, p. 140).
The following dosage form has been accepted:
THE SMITH-DORSEY COMPANY, LINCOLN, NEB.

Tablets Pyridoxine Hydrochloride: 1 mg.

SULFANILAMIDE (See New and Nonofficial Remedies, 1941, p. 505).
The following dosage form has been accepted:
HYNSON, WESTCOTT & DUNNING, INC., BALTIMORE.

Sulfanilamide (Sterile Crystalline): 5 gram shaker-type package.

SULFAPYRIDINE (See New and Nonofficial Remedies, 1941, p. 508).
The following dosage form has been accepted:
FREDERICK STEARNS & COMPANY, DETROIT.

Tablets Sulfapyridine: 0.5 Gm. (7.716 grains).

SULFADIAZINE (See THE JOURNAL, Feb. 28, 1942, p. 730).
The following dosage form has been accepted:
THE UPJOHN COMPANY, KALAMAZOO, MICH.

Tablets Sulfadiazine: 0.5 Gm. (7.7 grains).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 3, 1942

INDUSTRIAL SUPPORT OF NUTRITIONAL RESEARCH

The support of research is apparently being borne more and more by industry. Studies of human nutrition often demand observations on human beings, and such research is apt to be expensive. The universities and teaching hospitals have long carried this expense without special funds. The time has already come when large scale projects, involving special equipment and facilities, can hardly be undertaken with existing resources.

Now a group of industrial firms in the food field, or in closely allied lines, has arranged for the continuous support of fundamental research in nutrition. In December 1941 an organization known as Nutrition Foundation, Incorporated, was established with headquarters in the Chrysler Building, New York. Eighteen founding firms have each agreed to contribute $10,000 annually for five years, this sum to aid the development of fundamental research in nutrition and in the dissemination of the results of research to physicians and other interested professional groups as well as to the public. A recent announcement states that six new sustaining members have subscribed to the undertaking. There will thus be available nearly one million dollars for the support of research on nutrition during the next five years.

Already the Nutrition Foundation has made an illustrious start in the realization of its declared purposes. The foundation is guided by a scientific advisory committee composed of prominent persons in the fields of medicine and nutrition and by its food industries advisory committee, which includes research and technical directors of firms which have contributed to the organization. Sizable grants-in-aid have been awarded to thirty-six projects in twenty-two leading universities and research centers. Applicants for grants are provided with printed forms on which they are asked to indicate the nature of the problem and other pertinent information that will aid the scientific advisory committee in evaluating the project and determining whether the request can be granted.

The expressed intent of the leaders of this foundation has been that the research should not supplant the research activities of individual firms. The emphasis has been on fundamental investigations in nutrition. The problems that are being supported may be divided into those which have a direct relationship to the war and public health and those of a fundamental nature that apparently are not related to any immediate emergency. Among the problems now being investigated are the relation of nutrition to resistance to fatigue in man, the effects of environment on cell respiration, metabolism and nutritional requirements, an evaluation of methods for aiding in the clinical detection of vitamin deficiencies, a study of the relation of the state of nutrition to cellular metabolism with special reference to rheumatic fever and the problems that may be introduced by chemotherapy, and a study of dietary factors involved in the healing of bone fractures. Grants have been made also for the support of such practical studies as the development of a natural butter that may be suitable for use under tropical conditions, a study of the utilization of proteins and inorganic salts of the soybean and the effect of methods of large quantity cookery on the vitamin and mineral content of vegetables. Studies also have been supported on the metabolic fate of choline, of the determination of thiamine and the stability of this dietary essential in cereal products, and on the relationship of proteins and vitamins in nutrition.

Another important aspect of these studies, according to Prof. C. G. King, scientific director of the foundation, is the provision that is being made for the training of young persons in research under the most competent leadership in American educational institutions. By reason of the broad purposes of the foundation it has been possible to make a small grant for the support of some of the work of the Food and Nutrition Board of the National Research Council. Recently the foundation announced the establishment of a new periodical to be called *Nutrition Reviews*. Under the editorship of Dr. Fredrick J. Stare of Harvard University this publication will make its initial appearance in October or November; it will be unique in that it will contain interpretative abstracts of publications in the field of nutrition and allied sciences. The journal is intended to bridge the gap between the research laboratory or clinic and the channels through which such information becomes effective. No other problem now facing the country is more important than the securing of adequate food and the recognition of the persons and places where nutritional inadequacies may exist. The foundation through its support of fundamental research and through its publication of *Nutrition Reviews* undoubtedly will contribute importantly to the obtaining of factual information and the dissemination of facts that will aid in the progress of the present war and in the

solution of some of the many health problems that will be presented following the successful termination of the war. THE JOURNAL offers its felicitations to the new publication which now is in its period of gestation and offers its encouragement to Nutrition Foundation, Incorporated, in its efforts to accomplish the purposes for which it was founded.

GALVANIC STIMULATION OF MUSCLE FOLLOWING PERIPHERAL NERVE SECTION

About one hundred years ago a controversy, typical of many that arose in the early nineteenth century, disturbed physiologists and anatomists. They debated actively the question of the relationship between nervous tissue, particularly the spinal and peripheral nerves, and the contractile elements of muscle. Was the property of muscular contractility inherent in the muscle itself or was it derived from the nervous system? Haller, then the greatest voice in physiology, maintained after numerous experiments that contractility remained after the nerves to a muscle had been cut through. The property of contractility, according to the hallerians, was independent of the nervous system and inherent in the muscular fiber itself. Such a bold assertion could not pass in that period without animadversion. Other learned physiologists, an influential sect called the "neurologists," maintained that contractility was a property of the nervous system itself. Although the neurologists modified their dogmatic tenets from time to time and the hallerians extended the term "contractility," neither side overwhelmed the other for many years. Frequent experiments won for the neurologists a position of some security. Muscles lose their power of contractility when deprived of nervous influence after ten days or more.

As was characteristic of the period, much paper and ink were expended in theoretical argumentation. A few observers made wise use of the experimental method. John Reid, a young lecturer on physiology in the University of Edinburgh, while at work attempting to unravel the hallerian-neurologist entanglement, made another discovery of prime importance to medicine and of far reaching significance in civil as well as military neurology. In the third of a series of experiments, Reid [1] reported his results as follows:

> The spinal nerves were cut across, as they lie in the lower part of the spinal canal, in four frogs, and both posterior extremities were thus insulated from their nervous connections with the spinal cord. The muscles of one of the paralyzed limbs were daily exercised by a weak galvanic battery, while the muscles of the other limb were allowed to remain quiescent. This was continued for two months, and at the end of that time the muscles of the exercised limb retained their original size and firmness and contracted vigorously, while those of the quiescent limb had shrunk to at least one half of their former bulk and presented a marked contrast with those of the exercised limb. The muscles of the quiescent limb still retained their contractility, even at the end of two months; but there can be little doubt that, from the imperfect nutrition of the muscles and the progressing changes in their physical structure, this would in no time have disappeared had circumstances permitted me to prolong the experiment.

Reid noted the importance of galvanic stimulation in maintaining the nutrition of a muscle deprived of its nervous influence. Subsequently other investigators learned that galvanism is the only means at our command of stimulating muscular contraction in a completely paralyzed muscle. As early as 1841 Reid saw the clinical implication of his animal experiment, for in a footnote he wrote "The application of the results of these experiments to the treatment of certain cases of paralysis is so obvious as to require no illustration" (p. 327).

Although the value of galvanism to Reid may have been 'obvious,' its use was by no means universally adopted by the medical profession. Over the hundred years since his discovery its value has been both overrated and completely repudiated. Experiments in the last war did not completely settle the problem, but the recent work of Ernest Gutmann and Ludwig Guttmann [2] put a stamp of approval on the importance of inducing muscular contractions by galvanic stimulation in accelerating the return of muscle to its initial volume after reinnervation and possibly in preventing atrophy. These experimenters found, moreover, that muscles treated with galvanism showed less fibrosis and a better excitability and contractility on direct stimulation as well as a stronger reflex action than those untreated. Reid's position is thus completely upheld by Gutmann and Guttmann, and his crucial experiment, nearly lost in the dusty literature of the past, takes a new and important place in the history of medicine.

1. Reid, John: On the Relation Between Muscular Contractility and the Nervous System, London and Edinburgh Monthly J. M. Sc. 1: 320 (May) 1841.

THE CHANGING CONCEPTS IN PATHOLOGY

Pathology as defined by Welch [1] is "the science, as distinguished from the practice, of medicine. In a narrower and more restricted sense pathology is a study of the structural alterations produced by the disease, as revealed at postmortem examinations and during surgical operations. Pathologic anatomy is a study of these alterations, but the symptoms and the activities of the body resulting from these morbid changes belong also to pathology."

"Nobody can busy himself continually with anatomy without noticing the changes that disease produces in the body" (Virchow [2]). The ancient concept that dis-

2. Gutmann, Ernest, and Guttmann, Ludwig: Effect of Electrotherapy on Denervated Muscles in Rabbits, Lancet 1: 169 (Feb. 7) 1942.

1. Welch, W. H.: History of Pathology, Bull. Inst. Hist. Med. 3: 1 (Jan.) 1935.

2. Virchow, Rudolf: Morgagni and the Anatomic Concept (An Address Presented on March 30, 1894, to the Eleventh International Medical Congress at Rome, Italy), translated from the original German by Robert E. Schlueter and John Auer, Bull. Hist. Med. 7: 975 (Oct.) 1939.

ease is something general, an essence which affects the organism as a whole, was completely shattered by Morgagni, who in the seventy-ninth year of his life published a condensation of a life's work in five volumes under the title "De sedibus et causis morborum per anatomen indagatis," which means "the seats and causes of disease as revealed by anatomy." This is a purely anatomic concept—the beginning of the science of pathologic anatomy. From the study of organs the new medicine with its anatomic orientation advanced with Bichat to the study of tissues and with Virchow to the study of cells. Virchow traced disease to its ultimate indivisible unit—the cell. Virchow's cellular pathology was the foundation for modern scientific medicine.

The pathologist formerly devoted himself largely to dissecting cadavers and carefully recording the appearances. However, great pathologists of an earlier day realized that the study of structure alone was insufficient. The charge that "deadhouse" pathology was concerned with discovery of new morphologic units but failed to reveal their function was, however, only partly true. Thus, while Langerhans did not have the slightest notion of the function of the particular groups of cells within the pancreas described by him, Tawara was led to the discovery of the conduction system in the heart while investigating the structure of the auriculoventricular node in expectation of elucidating the cause of heart failure in valvular heart disease. Here is an instance which demonstrates that a discovery of a particular structure may lead directly to the discovery of its function. Claude Bernard, founder of experimental medicine, said "It is not sufficient to know the anatomy of organized elements. It is necessary to study their properties and their functions with the aid of the most exacting experiments."

The contributions to morphologic pathology by Virchow and Rokitansky and their schools were followed by studies in pathologic etiology under the stimulus of Pasteur and Koch. Their contributions gave rise to the new science of immunology (Roux, Metchnikoff, Ehrlich, Behring and their students). "It is characteristic of science and progress that they continually open new fields to our vision," said Pasteur. Indeed, the interest in immunology was soon superseded by that in colloid chemistry, which in turn gave way to interest in hormones, only to be followed by the discovery of vitamins. Modern medicine also witnessed the renewal of interest in heredity, constitutional types and allergy.

Modern pathology is a synthesis of all these basic concepts, a happy association of the spirit of Morgagni and of Claude Bernard. With this synthesis the pathologist of today is concerned. Simonds [3] in his Christian Fenger lecture states that structure is essential to the production, liberation, distribution and utilization of energy. Structure and function are inseparably linked together. The pathologist of today, according to Simonds, views the processes of disease from three points of view: 1. He is interested in the origin and development, that is, the pathogenesis, of the structural changes and functional disturbances characteristic of each disease. 2. Having determined the structural changes, he attempts to learn how the changes alter the function of the organ and of the body as a whole. 3. He is next concerned with the adaptations which the body makes in order to carry on in spite of these structural changes and their effect on important functions. Thus modern pathology has become largely an experimental science, including in its scope the study both of function and of structure.

3. Simonds, J. P.: Correlation of the Anatomic and Functional Pathology of Renal Disease (Sixth Christian Fenger Lecture of the Institute of Medicine and the Chicago Pathological Society, Feb. 27, 1942), Proc. Inst. Med. Chicago, May 15, 1942.

Current Comment

HEALTH ASPECTS OF FUEL RATIONING

On page 370 of this issue of THE JOURNAL appears a statement relative to the health aspects of fuel rationing and a brief summary of the coupon rationing plan announced by the Office of War Production in a press release.[1] The possibility that about three million homes and apartments in thirty states on the Eastern Seaboard and in the Middle West may have to be kept at reduced temperatures in the coming winter owing to a shortage of heating oil is of interest to physicians. Warmth may be required in certain circumstances for reasons of health, and physicians may be called on under the proposed regulations to certify to the necessity for supplemental oil allowances. Families in which there are 1 or more children under 4, 1 or more persons aged 65 or older and 1 or more cases of illness, convalescent persons, persons with low vitality or persons in circumstances which require the maintenance of a higher degree of room temperature than the temperatures now recommended may wish physicians to issue certificates. In the presence of a dearth of scientific information as to tolerable minimum temperatures, a medical advisory committee to the Office of Price Administration has been compelled to disregard the standard published recommendations for the comfort zone of heating and ventilation and to attempt to establish a safe zone at a lower temperature in which health could be considered adequately safeguarded and discomfort minimized. The Office of Price Administration has tentatively accepted the recommendations of the committee as set forth elsewhere in this issue. Local physicians may be called on by the local ration boards to act in an advisory and consulting capacity to the board. They may also be requested to certify to the necessity for supplemental fuel rations in excess of the standard allowance to meet the situations outlined.

1. Press release, Office of War Information, War Production Board, Tuesday, Sept. 15, 1942.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession.

PHARMACISTS: THE GOVERNMENT URGENTLY NEEDS QUININE

The War Production Board has issued a call to pharmacists throughout the nation requesting them to turn in their supplies of quinine, regardless of age, quantity or nature. All salts of quinine, quinidine, cinchonine and conchonidine are wanted. Since the supply of these medicines has been cut off and the quota for each man in our armed forces is 4 ounces a year, the need is urgent.

Domestic use of quinine and similar chemicals, except for malaria, has been curtailed, making it possible for pharmacists to return unopened packages to their wholesalers for credit, and their opened packages to recognized clearing houses for assay and transfer to military medical supply stores.

The Philadelphia College of Pharmacy and Science has volunteered to act as an assaying depot for any opened packages of quinine compounds that are contributed to the war effort by patriotic pharmacists. Each package received will be tested for identity and then placed in a common container with other quantities of that particular salt. Then each mass of accumulated chemicals will be assayed for strength, certified, and sent to the Defense Supplies Corporation, which will direct the shipments to proper medical authorities. The less common salts of quinine, such as the valerate and the acetate, will first be processed to quinine sulfate or hydrochloride.

Clean, presentable quantities of quinine salts, quinidine, cinchonine and conchonidine are wanted. Pills and tablets are not desired at this time. Pharmacists in the Southern states, where malaria may occur, should retain enough quinine sulfate or hydrochloride to meet their demands. All other pharmacists should ship their loose stocks immediately, by parcel post, to the Philadelphia College of Pharmacy and Science, Philadelphia. Unopened packages should be returned immediately to wholesalers, who will forward them to proper authorities and reimburse the sender.

Do it now! The need is great! Let there be no more Corregidors or Bataans for lack of quinine to fight diseases to which our soldiers and sailors are exposed.

The War Production Board has formally authorized the college to offer this service. All packages should be addressed to Quinine Pool, Philadelphia College of Pharmacy and Science, 43d Street, Woodland and Kingsessing avenues, Philadelphia.

ARMY TAKES OVER RED CROSS-HARVARD HOSPITAL IN ENGLAND

The U. S. Army headquarters for the European theater of operations has announced that the American Red Cross-Harvard University Hospital in southern England has been taken over by the army and will be the central laboratory for U. S. armed forces in Britain. This hospital was established in 1940 and operated jointly by the American Red Cross, Harvard University and the British Ministry of Health for the study of wartime epidemics (THE JOURNAL, Aug. 31, 1940, p. 788, and Jan. 25, 1941, p. 314). Its twenty-two buildings were all fabricated in the United States, from which the sixty-six thousand pieces of fabricated building material were shipped to England to be erected by British workmen. The director of the hospital was Dr. John E. Gordon, professor of preventive medicine and epidemiology at Harvard University Medical School. The staff comprised ten doctors, sixty-two nurses, six technicians and eight administrative members. Secretary of War Stimson said that it was a truly splendid addition to the U. S. Army's medical facilities. The hospital will be turned over to the British Ministry of Health at the end of the war.

COMMITTEE APPOINTED TO STUDY ARMY MEDICAL SERVICES

At the request of Lieut. Gen. Brehon B. Somervell, Commanding General of the Services of Supply, and Major Gen. James C. Magee, the Surgeon General, the Secretary of War has appointed a committee to study the medical services of the Army, the War Department announced on September 24. The purpose of the study will be to assure the personnel of the Army the best possible medical care, both in the continental United States and in overseas theaters of operations. The committee's study will help the army medical department to maintain the high standards of professional efficiency and devotion which have been the finest traditions of the American medical profession and the medical department of the Army.

The members of the committee are:

Col. Sanford Wadhams, U. S. Army, retired, Torrington, Conn.
Col. William L. Keller, U. S. Army (medical corps), retired, Washington, D. C.
John Herr Musser, M.D., professor of medicine, Tulane University of Louisiana School of Medicine, New Orleans.
Evarts Ambrose Graham, M.D., professor of surgery, Washington University School of Medicine, St. Louis.
Dr. Arthur Hiler Ruggles, Providence, R. I., clinical professor of psychiatry and mental hygiene at Yale University School of Medicine, New Haven, Conn.
I. Ben Robinson, D.D.S., dean of the University of Maryland Dental School, Baltimore.
Mr. James Hamilton, superintendent of New Haven Hospital, New Haven, Conn.
Louis Dublin, Ph.D., New York, statistician, Metropolitan Life Insurance Company.
Dr. Lewis H. Weed, professor of anatomy, Johns Hopkins University Medical School, Baltimore, and chairman, Division of Medical Sciences, National Research Council.
Mr. Corrington Gill, Washington, D. C. (executive of the committee).

SAVING FOOD

The Bureau of Home Economics of the United States Department of Agriculture has prepared a series of charts and folders which should be available in every home. One is entitled "Fight Food Waste in the Home." The other is "Get the Good From Your Food." These, together with some previously prepared folders called "Eat the Right Food," "Food for Growth" and "Vitamins from the Farm to You" are among the most useful, scientific and constructive items thus far made available. The material is available not only in pamphlet form but also in the form of large charts and may be obtained from the Government Printing Office in Washington, D. C. The charts are sold in sets of one to ten for 25 cents for each set.

AVIATION PHYSIOLOGISTS

Another class of aviation physiologists graduated on September 12 at the School of Aviation Medicine in Texas and were given certificates by the commandant of the school, Col. Eugen G. Reinartz, M. C. The course in aviation physiology covers the theory and practical use of oxygen equipment, the effects of lower barometric pressure on personnel, the operation of low pressure chambers and the conduct of high altitude indoctrination and classification and anoxia. The list of graduates comprises members of the air corps, of the sanitary corps and the following medical officers: Lewis E. Barrick, Chicago; Dale D. Dickson, Letts, Ind.; Vincent H. Handy, East Orange, N. J., and John M. McIver, Cleveland.

GENERAL PATTERSON RESIGNS AS DEAN

Major Gen. Robert U. Patterson, U. S. Army, retired, who for several years has been dean of the University of Oklahoma Medical School, Oklahoma City, has submitted his resignation to the board of regents of the university because of having reached the retirement age of 65.

THE SHORTAGE OF NURSES

Plans for dealing with critical shortages in the nursing field were considered at a meeting in Washington, D. C., of the Subcommittee on Nursing of the Health and Medical Committee of the Office of Defense Health and Welfare Services. The subcommittee recommended stepping-up programs for the training of nurses and the more extensive use of auxiliary workers.

Measures taken by the Royal Canadian Army Medical Corps to meet nursing shortages in Canada were described by Miss Elizabeth Smellie, matron in chief of the corps, who is in Washington at the invitation of the Army Nurse Corps. Wartime nursing practices in England were explained by Miss Elizabeth Phillips, until recently associate chief nurse of the American Red Cross, Harvard Field Hospital Unit, stationed in Salisbury, England.

To arrange an accelerated program for nursing classes starting this fall, the Committee on Educational Problems in Wartime of the National League of Nursing was requested to outline by October 1 suggested curriculums for twenty-four, twenty-eight and thirty month periods. For high school graduates the subcommittee recommended revising the three year curriculum so that organized education will be completed in thirty months and the last six months devoted to supervised practice. For students with two to four years of approved college preparation the subcommittee proposes compressing the training period so that the student will be graduated in from twenty-four to twenty-eight months, depending on previous education and her accomplishments in the school.

To promote wider use of auxiliary workers, the subcommittee recommended better classification of this type of work. It proposes that a joint committee, with power to act, representing the National Nursing Council for War Service and the Subcommittee on Nursing, be asked to outline the new classification. The factors to be considered are nomenclature, qualifications, salary, training and use. The joint committee will be asked to have its plan of classification ready by October 1.

MEDICAL CORPS ORDERS

Major Norman R. Booher has assumed command of the Fort Benjamin Harrison station hospital, relieving Lieut. Col. Jesse W. Bowers, ordered to Camp Breckinridge, Kentucky.——First Lieut. George H. Rodman, Billings General Hospital, Fort Benjamin Harrison, Indiana, has been ordered to duty at Camp Atterbury, Indiana.——First Lieut. Moses H. Holland, Billings General Hospital, has been ordered to a numbered hospital, Camp Rucker, Alabama.——First Lieut. Houston W. Shaw has been assigned to duty at Fort Benjamin Harrison, Indiana.——Lieut. Wilbur G. Ball, U. S. Naval Medical Reserve, has been named medical officer at the U. S. Naval Training Station for Signalmen recently opened at the University of Illinois at Urbana. Lieutenant Ball, whose home is in Bloomington, graduated from the University of Nebraska College of Medicine, Omaha.

"TOKYO" FLIGHT SURGEON AWARDED DISTINGUISHED FLYING CROSS

First Lieut. Thomas R. White, M. C., U. S. Army, was one of twenty officers and three enlisted men to be presented with the Distinguished Flying Cross recently by the chief of the army air forces. All members of this group accompanied Brig. Gen. James B. Doolittle on his famous air raid over Tokyo and other Japanese cities, April 18. Dr. White, who graduated from Harvard Medical School in 1937, accompanied the Tokyo expedition as flight surgeon.

DR. EBAUGH TO SERVE AS PSYCHIATRIC CONSULTANT

Dr. Franklin G. Ebaugh, Denver, has been granted a leave of absence as medical director of the Colorado Psychopathic Hospital and professor of psychiatry at the University of Colorado School of Medicine, Denver, for the duration of the war. He has been commissioned a lieutenant colonel and will serve as chief psychiatric consultant of the eighth service command with headquarters at Fort Sam Houston, San Antonio, Texas.

RANK INCREASED IN MEDICAL ADMINISTRATIVE CORPS

The President recently signed a law which authorizes the promotion of officers in the medical administrative corps of the army up to and including the rank of colonel. Heretofore, officers of the medical administrative corps could not be promoted above the grade of captain. The law authorizes granting retroactive pay to those officers who were recently appointed above the grade of captain before the law was enacted and whose pay above that of captain had been disallowed by the Comptroller General as a result of limitations opposed by the National Defense Act.

GENERAL METCALFE TRANSFERRED TO WASHINGTON

Brig. Gen. Raymond F. Metcalfe, U. S. Army medical corps, retired, who has been serving as surgeon with the rank of colonel at the San Francisco port of embarkation, has been transferred to Washington, D. C., for duty on the War Department Retirement Board, of which Major Gen. Malin Craig, retired, is the head. General Metcalfe has been succeeded at San Francisco by Brig. Gen. Wallace DeWitt, U. S. Army medical corps, retired, who is also serving in the grade of colonel.

NEW HEAD OF NAVY MEDICAL SCHOOL

Capt. Charles W. O. Bunker, commander of the Naval Medical School, Bethesda, Md., on September 14 was assigned to command the Naval Medical Center at Bethesda and was nominated for promotion to rear admiral. He succeeds Rear Admiral Charles M. Oman, who will become commanding officer of the Naval Convalescent Hospital, Harriman, N. Y. Capt. Paul W. Wilson has been named to succeed Captain Bunker as head of the medical school. The latter graduated at Cornell University Medical College, New York, in 1905.

MEDICAL STATION UNITS SHIPPED TO CARIBBEAN AREA

The American Red Cross has shipped twelve complete fifty bed emergency medical station units to certain points in the Caribbean and Canal Zone areas. These units are equipped with supplies capable of administering to fifty casualties requiring hospitalization. Six of the units were shipped to Puerto Rico, three to the Virgin Islands and three to the Canal Zone. These units are similar to those sent last summer to Hawaii and the Philippine Islands.

IDAHO PHYSICIANS IN THE ARMED SERVICES

The following physicians of the state of Idaho had already joined the armed services as of July, according to *Northwest Medicine*, August 14:

ARMY

Abbott, W. R., Idaho Falls.
Alban, Harry, Kimberley.
Anderson, V. H., Buhl.
Bischoff, G. H., Boise.
Brothers, W. W., Pocatello.
Bovenmyer, E. S., Pocatello.
Budge, B. C., Boise.
Coats, R. M., Weiser.
Creed, J. W., Filer.
Cromwell, J. O., Blackfoot.
Davies, D., Boise.
Douglas, W. S., Lewiston.
Duncan, D. G., Council.
Eisenberg, B. C., Pocatello.
Engelcke, R. H., Boise.
Goodwin, R. A., Emmett.
Gudmundsen, M. D., Boise.
Guyatt, H. E., Idaho Falls.
Hanchey, W. H., Weiser.
Hawkins, O. J., McCall.
Hedemark, N. G., Boise.
Holstein, Theodore, Boise.
Kretcher, L. C., Twin Falls.
Marsh, F. S., Culdesac.
McBratney, E. W., Buhl.
McQueen, A. B., Lewiston.
Meyers, Isadore, Boise.
Newton, A. M., Pocatello.
Peterson, W. A., Boise.
Pierce, W. H., Cottonwood.
Privett, L. B., Boise.
Rawlinson, R. P., Emmett.
Rees, E. T., Twin Falls.
Rothman, B. G., Hagerman.
Rulien, W. A., Wendell.
Savin, C. H., Wendell.
Sawyer, M., Twin Falls.
Schow, F. W., Hailey.
Simpson, S. D., Caldwell.
Stone, H. W., Boise.
Stowe, H. L., Twin Falls.
Talbot, R. E., Wilder.
Tall, Alden, Rigby.
Terhune, C. A., Burley.
Towner, A. A., Spokane.
Van Dorn, R. W., Coeur d'Alene.
Wendle, C. C., Sandpoint.
White, R. L., New Plymouth.
Worlton J. E., Idaho Falls.

NAVY

Beymer, C. B., Twin Falls.
Chaloupka, H. M., Boise.
Howard, F. H., Shoshone.
Jones, E. N., Boise.
Mack, O., Boise.
Shaw, M. B., Boise.
West, I. F., Boise.

ORGANIZATION SECTION

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—S. 2708 has passed the Senate, proposing to amend the Selective Training and Service Act of 1940 so as to extend the benefits of the U. S. Employees' Compensation Act to conscientious objectors. A companion bill, H. R. 7459, introduced by Representative May, Kentucky, is pending in the House Committee on Military Affairs. H. R. 6196 has passed the House and Senate, proposing to authorize the authorities of the Panama Canal Zone to prohibit the importation or production of marihuana in the Canal Zone.

Bills Introduced.—S. 2769, introduced by Senator Walsh, Massachusetts, proposes to establish the rank and grade of rear admiral, dental surgeon, in the Dental Corps of the U. S. Navy. Dental officers will become eligible for selection and promotion to this rank and grade under the provisions governing the selection and promotion of other staff officers to the grade of rear admiral. The pay, allowances and retirement for rear admiral, Dental Corps, will be the same as for other officers of equal rank and length of service. S. 2770, introduced by Senator Walsh, Massachusetts, provides that hereafter persons who are otherwise qualified but who have physical defects which will not interfere with the performance of general or special duties to which they may be assigned may be issued appointments in the Naval and Marine Corps Reserve and ordered to active duty. H. R. 7568, introduced by Representative Doughton, North Carolina, proposes to discharge more effectively the obligations of the United States under certain treaties relating to the manufacture and distribution of narcotic drugs, by providing for domestic control of the production and distribution of the opium poppy and its products.

DISTRICT OF COLUMBIA

Changes in Status.—S. 2733 has passed the Senate, proposing to amend the existing law providing for the registration of births in the District of Columbia. H. R. 6362 has passed the House and Senate, imposing an annual registration requirement on persons licensed to practice the healing art in the District of Columbia. The annual registration fee will be $2, and registration must be effected during the month of December of each year.

Bills Introduced.—S. 2756, introduced by Senator Capper, Kansas, provides for the issuance of a license to practice osteopathy in the District of Columbia to Maria G. Waksmundzka. H. R. 7500, introduced by Representative Randolph, West Virginia, proposes to amend section 927 of the Code of Law of the District of Columbia relating to insane criminals so as to make the section applicable to cases arising in the juvenile court and so as to authorize the commitment of criminals suspected of being of unsound mind to the Gallinger Municipal Hospital for a period not exceeding thirty days, which period may be extended by the court for good cause shown, for examination and observation by the psychiatric staff of the hospital. If, after examination and observation, the staff reports that the accused is insane, the court may then cause a jury to be impaneled to inquire into the sanity of the accused.

MEDICAL ECONOMIC ABSTRACTS

A CRITICISM OF MEDICAL SOCIETY PLANS

A view of Medical Society Plans by Lewis H. Pink, superintendent of insurance of the state of New York, which contains some sharp criticisms by one who is in a position to influence these plans greatly in New York State at least, but who has not been a hostile critic, is contained in the following abstract from an address by Mr. Pink delivered before the Conference of National Committee on Maternal Health held at the New York Academy of Medicine on June 20:

Hospital plans have been successful not only in New York City but upstate and in many cities and states throughout the country. But the medical care plans have almost invariably proved disappointing and none of them as yet have had any distinct success. In New York City we have licensed eight medical indemnity corporations and none of them have made more than a slow and uneventful beginning. Some have become discouraged and have submitted to voluntary liquidation. Even the corporation which received assistance from the medical organizations, despite the zeal of Dr. Elliott, has as yet made little progress. Those in the upstate cities have done better, but that is largely because they have some affiliation with hospital plans.

The chief difficulty with the medical plan seems to be that, while it has some support from the medical societies and the profession as a whole, the idea has not made a serious impression. Apparently, while medical men realize the danger of state medicine if something is not done, they are fearful of these cooperative ventures and, in any event, so far have failed to back them with sufficient enthusiasm, force and strength. The medical societies wish to prevent those types which they do not like, but they are unwilling to sacrifice sufficient time, effort and money to make those which they do countenance successful. Some of the plans have not succeeded because the doctors expected to make money out of them, and these plans are not intended to be profit making nor are they susceptible to it. Some are too complicated and lack sales appeal. In other cases the physicians did not fully realize that business backing, business judgment and also some real money are necessary to start a successful venture. While results to date are anything but encouraging, we in the department have not given up hope or expectation. We believe that there is real need for the medical plan and that eventually one will show the way to success.

From the very beginning it has seemed to me that medical care is very closely bound up with hospitalization. It is not a thing apart. The care of the patient before he goes into the hospital, during his hospitalization and after he leaves is or should be continuous. It would seem logical that hospital plans should be permitted to provide medical services. Organized medicine feels differently, and organized medicine has prevailed. It wants a strict separation of something which, it seems to me, is not easily or properly separable. The result is that, when the Associated Hospital Service of New York finds that it needs to provide surgical care in order to give proper service to its members, an affiliated medical organization is created. This means additional red tape and unnecessary expense. We have the same situation in the very strict dividing line between our fire and casualty coverages. The companies insist that we must not have comprehensive coverages in a single company and the result is that the number of companies is needlessly multiplied, because fire companies establish casualty affiliates and vice versa.

From press release.

While it seems to me that the tendency is shortsighted, I am willing to ride along. I realize that while the mechanics are important they are far less so than the intelligence, spirit and character of management that go into the effort. If the doctors insist that medical care be separated from hospitalization, let us have it that way, provided the medical fraternity is willing to make it a success. The professions of law and medicine have done a great deal for this country and for the world, and we must look to them for leadership in their respective fields. We do not want to make hired men of the doctors, nor do we wish in any way to lower their professional standards. On the other hand, the medical societies must realize that they must serve, first, the public and only secondarily the interest of their members. They must not be too strenuous in opposing new thoughts, new ideas and new experiments.

The recent decision of the Court of Appeals of the District of Columbia in affirming the conviction of the American Medical Association for conspiracy to violate the Sherman Anti-Trust Law should be at least a warning. The Association attempted to prevent physicians from joining a group health organization because it was not organized along approved lines. The decision points out that professional people enjoy a monopoly which in itself is a restraint on competition and aptly says "They are restraints which depend upon capacity and training, not special privilege. . . . The people give the privilege of professional monopoly and the people may take it away."

If the medical societies fail in broad constructive leadership and are unwilling or unable to provide adequate medical and maternity care, there is undoubtedly more than a threat of state medicine. Only recently the President of the United States recommended the extension of the social security plan to include federal health insurance, which would provide both for permanent and for temporary disability and also for hospital benefits. Even the states are getting restless and Rhode Island only about two months ago, perhaps in order to get ahead of the federal government, established a state health insurance plan known as the Cash Sickness Compensation Act.

We are constantly recognizing wider responsibility for the maintenance of the health and well-being of the public and the tendency is to exercise that responsibility through government. In this country I think most of us are agreed that private initiative and cooperation should be tried and found wanting before government is resorted to. We are not as fearful of government as we used to be, but it is not the part of wisdom to lay all our burdens on government or to make any government, no matter how beneficent and well meaning, too powerful and all embracing.

What is the medical profession going to do?

LIVES SAVED FOR DEFENSE

Better medical care and improved living conditions are responsible for the fact that 2,900,000 of the 26,500,000 men of ages 20 to 44 who are subject to military service are alive and subject to such service today. This is the conclusion of the Statistical Bulletin of the Metropolitan Life Insurance Company for August. About one third of the 900,000 persons at the age of 65 are alive at the present time because of the advances of science and the standards of living that have aided in the reduction of mortality since their birth.

WOMAN'S AUXILIARY

Florida

The Woman's Auxiliary to the Duval County Medical Society held its annual meeting in the home of Mrs. Lucien Dyrenforth. The following officers were elected for the coming year: president, Mrs. Raymond King, reelected; vice president, Mrs. Ernest Veal; secretary, Mrs. Leo Wachtel, and treasurer, Mrs. W. H. McCullagh, reelected. Otis Owens of the United States Secret Service showed a talking movie "Know Your Money," sponsored by the government in a drive against the passing of counterfeit money.

Kansas

The Woman's Auxiliary to the Sedgwick County Medical Society held a luncheon in Wichita recently with Mrs. O. A. O'Donnell as hostess. Mrs. Jerry Daniels of Wichita spoke on "My Experience in Pearl Harbor." The auxiliary has contributed 400 garments to the Red Cross and bundles to the Committee for Relief of Disaster in that county.

Dr. W. W. Bauer of Chicago, director of the Bureau of Health Education of the American Medical Association, spoke in Salina at the high school, at Marymount College and to the Saline County women's auxiliary, which sponsored his appearance in Salina.

Michigan

At a meeting of the auxiliary to the Kalamazoo Academy of Medicine, a report was made that two more wheelchairs have been reconditioned, making a total of three which the auxiliary has given the Loan Closet to be used in the county when needed. Miss Margaret Linsell, county home demonstration agent, addressed the auxiliary on nutrition.

The Kent County medical auxiliary was addressed by Mrs. Mary Riste, dietitian at Butterworth Hospital, on "Nutrition in Relation to Defense."

The auxiliary voted to cooperate, under the leadership of Mrs. William L. Rodgers, chairman of Red Cross Nutrition Committee, with the Grand Rapids Home Economics Association and the staff of the public museum in the production of a nutritional display to be used for educational purposes. The subject for the high school essay contest sponsored by the auxiliary is "Building Bodies for Defense."

Mrs. Leland M. McKinlay recently entertained the group with an illustrated talk on Nova Scotia, Cape Breton Island and the Maine coast. The Medical and Surgical Supply Committee is raising money with which to purchase a medical kit. The auxiliary voted to assess each member $1.

The annual spring tea was held in the home of Mrs. Leon DeVel on April 8. The program was an amusing playlet, "To—the Women," presented by Mrs. John R. Baker and Miss Millicent McElwee. Music was provided by Mrs. David B. Davis.

To each of the babies born to the members of the society during the current year a $1 bank account was presented. There were fifteen recipients.

Minnesota

Mrs. Raymond J. Josewski of Stillwater was elected president of the Minnesota woman's auxiliary at the annual meeting, June 29-July 1, in Duluth. Other officers elected are: president-elect, Mrs. F. S. McKinney, Minneapolis; first vice president, Mrs. Neil Dungay, Northfield; second vice president, Mrs. W. N. Graves, Duluth; third vice president, Mrs. L. P. Howell, Rochester; recording secretary, Mrs. E. V. Goltz, St. Paul; treasurer, Mrs. Henry Quist, Minneapolis; auditor, Mrs. J. A. Thabes Sr., Brainerd, and historian, Mrs. O. B. Fessenmaier, New Ulm. Honorary membership was conferred on Mrs. James Blake of Hopkins because of her outstanding service to the state and national auxiliaries. The annual meeting and luncheon were held at the Northland County Club. George S. Corfield, professor of geography at the Duluth State Teachers College, talked on "Lands of the New World Neighbor." Mrs. Frank N. Haggard of San Antonio, Texas, president of the national auxiliary, was a guest at the round-up breakfast on Wednesday morning.

At a recent Health Day Program given at the Mayo Foundation House with the Altruistic Club of Rochester, the auxiliary to the Olmsted-Houston-Fillmore-Dodge Counties Medical Society was addressed by Dr. R. M. Wilder and Miss Mary Foley. About 100 women were in attendance.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Physicians Needed.—The Los Angeles County Civil Service Commission announces positions in the Olive View Sanatorium as physician and assistant physician, both in the field of tuberculosis. Physicians who have completed one year of internship in an approved hospital may file an application for the position of assistant physician. Doctors with one year's recent experience in the practice of medicine may apply for the physician position. Qualified persons over 55 may file for the position of physician for "duration" appointments. Applications for these positions should be made on or before October 13. The commission also announces the position of resident physician open in the Los Angeles County General Hospital in the specialties of anesthesiology, dermatology and syphilology, general medicine, neuromedicine, neurosurgery, ophthalmology, orthopedic surgery, otorhinolaryngology or pathology. Interested persons should obtain information from the commission, room 102, Hall of Records in Los Angeles, on or before Saturday, October 17.

COLORADO

Preventive Medicine Clinic.—The establishment of a preventive medicine clinic by the University of Colorado School of Medicine, Denver, was announced on August 30. The report indicated that the clinic would be operated through the collaboration of the Junior League of Denver, Colorado General Hospital, Colorado Psychopathic Hospital and the medical school. Under the agreement between the Junior League of Denver and the university's board of regents the range of work of the clinic will include comprehensive health examinations for industrial and other employee groups, students and indigent patients; physical, social and industrial rehabilitation, and clinical facilities to aid in teaching medical and nursing students aspects of industrial medicine and individual rehabilitation. Newspapers reported that support for the clinic will be obtained by annual contributions from the Junior League and several industrial concerns. The project, which will offer opportunities for volunteer service by league members, will be housed in the Verner Z. Reed clinics of the medical school's outpatient department with a committee of three league members and three representing the school and hospitals supervising. Dr. James J. Waring, Denver, chairman of the clinic committee representing the medical school and hospitals, will be clinic director and Dr. Frank C. Golding, Denver, will be his assistant. Consultants will include Drs. Edward R. Mugrage, professor of public health and laboratory diagnosis, and Donald E. Cummings, B.S., director of the medical school's division of industrial hygiene and associate professor of medicine.

CONNECTICUT

Follow-Up of Acute Poliomyelitis Cases.—The division of crippled children of the bureau of child hygiene, state department of health, conducted a survey of every reported new case of acute anterior poliomyelitis occurring within the state during the period Jan. 1, 1941 to December 31. The object was to offer services to children with the disease and to secure information for the state register of crippled children. One hundred and thirteen new cases of poliomyelitis were reported by local health officers to the state department of health. Of these, 2 were subsequently found to be erroneously reported, 1 being a case of brucellosis, the other meningitis. Of the 111 actual cases of poliomyelitis reported during this period 102 were of persons under 21 years of age and 9 of persons over 21 years of age. Of the 102 patients 3 were children with out of state residences who were in Connecticut when they contracted the disease. Of the patients having complete follow-up, 3 were out of state residents and 9 were over 21 years of age. The cases were distributed throughout fifty-four towns and cities. Bridgeport and Hartford had the greatest number of cases, 14 and 9 respectively. Excluding those patients whose homes were out of the state and those over 21 years of age (all of whom were not eligible for listing on the state register), 79 out of 99 under 21 years of age and residents of Connecticut were followed up completely. Twenty-one of 79 patients were reported as having no residual weakness; 50 were left with residual paralysis and 1 died. Of the 57 patients with residual weakness, 17 were under the care of the division of crippled children as of Dec. 31, 1941. Twenty-four were under care in other clinics. In June 1942 the number of 1941 cases of poliomyelitis under care of the division of crippled children was 17 (an additional 4 cases having been closed, 3 as cured and 1 because the parents refused further treatment). Two cases reported shortly after the acute phase as presenting no residuals were later seen at a state crippled children clinic and demonstrated some weaknesses not noted earlier. An analysis of the state register of crippled children, representing 1,839 cases as of Jan. 30, 1940, revealed 12 per cent, or 220 cases, to be due to poliomyelitis.

DELAWARE

State Medical Meeting in Dover.—The one hundred and fifty-third annual session of the Medical Society of Delaware will be held at the State House, Dover, October 13, under the presidency of Dr. William Marshall Jr., Milford. The following will speak:

Col. Arthur P. Hitchens, Philadelphia, U. S. Army, Influences of Tropical Diseases.
Col. Henry van Zile Hyde, New York, U. S. Public Health Service, Civil Emergency Service.
Capt. Richmond C. Holcomb, Upper Darby, Pa., U. S. Navy, War Gases.
Capt. Robert H. Lowe, New York, U. S. Army, Transition.
Dr. George H. Gehrmann, Wilmington, Industrial Medicine.
Dr. William Oscar LaMotte, Wilmington, Primary Glaucoma: Etiology, Symptoms, Diagnosis.
Dr. Mesrop A. Tarumianz, Farnhurst, War Neuroses.

Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, will also address the session on "American Medicine and the War."

DISTRICT OF COLUMBIA

Examinations of Society's Members.—On August 4 the committee on public health of the Medical Society of the District of Columbia directed a communication to the society calling on members to demonstrate their belief in periodic health examinations by cooperating in a program to have examinations themselves. An announcement in *Medical Annals* for September states that eighty-five physicians have indicated that they will be examined and that they might be listed at the society's office as agreeing to have annual checkups.

ILLINOIS

Advisory Committee on Tuberculosis.—Governor Green recently appointed a special advisory committee to the division of tuberculosis control with Dr. Robinson Bosworth, medical director and superintendent of the Pleasant View Sanatorium, East St. Louis, as chairman. Members of the new committee include Drs. Edward K. Steinkopff, Springfield; William J. Bryan, Rockford; Kenneth G. Bulley, Aurora; David F. Loewen, Decatur; Frederick M. Meixner, Peoria; Henry C. Sweany, Chicago, and Mr. Wellington P. Shahan, Springfield, executive secretary of the Illinois Tuberculosis Association.

Wartime County Health Departments.—Special wartime county health departments are now functioning in seven of the twenty-three Illinois counties which have been named as health defense zones. Units recently added under this setup are DuPage County, Wheaton, under Dr. John P. Walsh, Greenview; Morgan County, Jacksonville, under Dr. Frank E. McCord, formerly of Topeka, and Will County at Joliet, under Dr. Cecil A. Z. Sharp, Macomb. Other counties where these units are operating are Cook, Lawrence, Lee and Williamson. Their purpose is to make available locally on a full time basis the professional services of public health physicians, nurses and sanitary engineers in both the urban and rural section of the overcrowded defense areas.

Chicago

University Promotions.—Dr. Morris Edward Davis, associate professor of obstetrics and gynecology at the University of Chicago School of Medicine, has been promoted to professor, and Dr. Henry Close Hesseltine has been promoted to associate professor of obstetrics and gynecology.

Society News.—The Chicago Orthopaedic Society will be addressed on October 9 by Drs. Edward A. Piszczek on "Recent Studies in the Epidemiology of Poliomyelitis"; Dallas B. Phemister, "Local Resection and Bone Transplantation in Bone Sarcoma," and Carlo S. Scuderi, "Fracture Dislocation of the Hip."

War Neuroses.—The Institute for Psychoanalysis, in cooperation with the department of neuropsychiatry of Michael Reese Hospital, will offer a series of six discussions on war neuroses October 5, 7, 9, 12, 14 and 16 designed for medical officers in the armed forces, medical students, interns and house officers. The registration will be limited to fifty but the course will be reopened on demand.

IOWA

Personal.—Dr. Chester L. Putnam, Manchester, has been appointed director of local health services for the state department of health, effective September 1. Dr. Putnam succeeds the late Dr. Marvin F. Haygood, Des Moines.

Sister Kenny Honored at Opening of Unit.—A testimonial dinner for Sister Kenny at the Fort Des Moines Hotel recently was a feature of the opening of the new hospital pavilion for the treatment of infantile paralysis. Drs. John F. M. Pohl and William A. O'Brien, Minneapolis, were guests with Sister Kenny at the opening of the unit, which is to be known as Kenny Cottage. Drs. James E. Dyson and Dwight C. Wirtz, Des Moines, established the pavilion under the auspices of the Iowa Lutheran Hospital.

MICHIGAN

Physical Hardening Program.—The board of regents of the University of Michigan, Ann Arbor, has approved a physical hardening program which will be compulsory for all men students when the fall term opens on October 5. Formerly the program was compulsory only for students who had joined one of the enlisted reserve programs or were registered under the Selective Service System. The men students will be required to participate in three ninety minute sessions each week with the emphasis on calisthenics, obstacle races, swimming and a variety of competitive activities designed to produce physical fitness. All students taking the course undergo physical examinations, and the activities in which they engage are determined by the physician's report.

MINNESOTA

New Health Directors.—Dr. Hermina H. Hartig has been appointed acting director of hygiene and health education of Minneapolis. Dr. Arthur E. Karlstrom, who has been director since 1940, has resigned to devote his entire time to private practice.——Dr. Mario McC. Fischer, health officer of Duluth, has been appointed medical director of St. Louis County. He will serve part time and will continue his duties as city health officer.

University News.—New appointments to the full time staff of the Students' Health Service at the University of Minnesota, Minneapolis, include those of Ramona L. Todd, Ph.D., and Dr. Myron M. Weaver, director of the health service at Knox College, Galesburg, Ill., and former director of the health service at Carleton College, Northfield.——Dr. Lawrence R. Boies, Minneapolis, was recently promoted from clinical associate professor in the division of otology, rhinology and laryngology to clinical professor and director of the division at the University of Minnesota Medical School, Minneapolis.

MISSOURI

Tuberculosis Medal.—Mr. A. W. Jones, secretary-treasurer of the Mississippi Valley Conference on Tuberculosis and executive secretary of the Tuberculosis and Health Society of St. Louis, was presented with the Hoyt E. Dearholt Memorial Medal during the annual meeting of the conference in Chicago, September 17. Mr. Jones is one of the founders of the conference and served as its president in 1915. He has been secretary-treasurer since 1932.

MONTANA

Plague Infection.—Plague infection has been reported proved in 2 specimens from ground squirrels (Citellus columbianus) collected in Beaverhead County, as follows: July 14, in a pool of 17 fleas and 5 ticks from 25 ground squirrels taken 15 miles northwest of Wisdom, on the north fork of the Bighole River; July 15, in tissue from 1 ground squirrel taken 3 miles northwest of Bighole Battlefield on Trail Creek.

Personal.—Dr. Lunsford D. Fricks, Seattle, has been appointed health officer of the Helena and Lewis and Clark counties health unit, succeeding Dr. Leo F. Hall, Helena, who has resigned on account of ill health.——Dr. James W. Craig, Circle, was recently elected president of the Montana Public Health Association. Miss Leila McDonald, Missoula, is vice president and Dr. Burton K. Kilbourne, Helena, secretary.

NEW JERSEY

Personal.—Robert P. Fischelis, Ph.M., Trenton, secretary and chief chemist of the state board of pharmacy and chief of the medical and health supply section, Office of Civilian Supply, War Production Board, received the honorary degree of doctor of science from Rutgers University, New Brunswick, at the recent commencement.

Community Home Project Quarantined for Infantile Paralysis.—The seven hundred home community of Winfield, erected as a defense housing project for workers in the Kearny war plants, was under quarantine, September 9, following the death of a boy in the Muhlenberg Hospital, Plainfield, the third death in an outbreak of infantile paralysis. Under the quarantine the men will be permitted to travel between their homes and their places of employment, but children will be confined to the premises. Visitors will not be permitted to enter the homes of the area. Volunteer policemen and firemen will serve as quarantine guards.

NEW YORK

Hospital News.—The Potts Memorial Hospital, Livingston, has changed its name to the Potts Memorial Institute, Inc., the better to connote its services as a tuberculosis institution.——The Woman's Christian Association Hospital of Jamestown will receive more than $133,000 from the estate of Miss Stella Beatrice Lowry. Miss Lowry's will directed that the fund be used "so far as possible to establish a convalescent ward for poor patients." Her mother was a founder of the hospital.

District Meetings.—Among others, Dr. Louis H. Bauer, Hempstead, discussed "Aviation Medicine" before the Third District Branch of the Medical Society of the State of New York at its meeting in Albany, September 17.——The Fourth District Branch was addressed, among others, September 18, by Lieut. Col. William V. Cone, Montreal, Canada, on "The Place of the Special Hospital in War and Some Experiences with One."——At a meeting of the Fifth District Branch in Rome, September 24, the speakers included Dr. Leon E. Sutton, Syracuse, on "The Problem of Healing in Large Deep Burns."——The Seventh District Branch was addressed at a meeting in Rochester, September 23, among others, by Drs. Nolan D. C. Lewis and Cornelius P. Rhoads, New York, on "The Psychological Problems of Age" and "Modern Conception and Treatment of Cancer." Speakers at a meeting of the Eighth District Branch in Batavia, October 1, included Dr. William D. Stroud, Philadelphia, on "Cardiac Pain."

New York City

Fund for Research in Bacteriology.—The New York Academy of Medicine announces that $1,000 is available for assignment this year under the Louis Livingston Seaman Fund for furtherance of research in bacteriology and sanitary science. The committee of the academy administering the fund will receive applications either from institutions or from individuals up to November 1. The fund will be expended only in grants in aid for investigation or scholarships for research in bacteriology and science. It may be used to secure technical help, aid in publishing original work or for the purchase of necessary books or apparatus. All communications should be addressed to Dr. Wilson G. Smillie, chairman of the Louis Livingston Seaman Fund, 1300 York Avenue.

Annual Graduate Fortnight.—The fifteenth annual graduate fortnight of the New York Academy of Medicine will be held October 12-23. "Disorders of the Nervous System" will be the theme of the morning panel discussions, afternoon hospital clinics, evening addresses and scientific exhibits and demonstrations which will make up the program. Dr. Timothy Leary, Boston, will deliver the Ludwig Kast Lecture Monday on "Pathology of Head Injuries" and Dr. William V. Cone, Montreal, Canada, will give the Wesley M. Carpenter Lecture Tuesday on "Principles of Treatment of Penetrating and Perforating Wounds of the Brain." Evening lectures will be given by:

Dr. Derek E. Denny-Brown, Boston, Principles of Treatment of Closed Head Injuries.
Dr. Eli Jefferson Browder, Subdural Hematoma (and Other Late Results of Head Injury).
Dr. Edward A. Strecker, Philadelphia, Military Psychiatry.
Dr. Harold G. Wolff, The Emotions and Disease.
Dr. Donald Munro, Boston, Tidal Drainage and Cystometry in the Treatment of the Bladder in the Presence of Spinal Cord Injuries.
Dr. Joseph E. J. King, Diagnosis and Treatment of Brain Abscess.
Dr. Gilbert Horrax, Boston, Differential Diagnosis and Prognosis of Brain Tumors.
Dr. Frank B. Walsh, Baltimore, Certain Abnormalites of Ocular Movements: Their Importance in General and Neurologic Diagnosis.
Dr. Byron P. Stookey, Wounds and Injuries of the Spinal Cord.
Dr. Francis C. Grant, Philadelphia, Surgical Treatment of Pain.
Dr. Stanley Cobb, Boston, Speech Disorders and Their Treatment.
Dr. Tracy J. Putnam, Multiple Sclerosis and "Encephalomyelitis."
Dr. Charles D. Aring, Cincinnati, Limitations of Vitamins in Neurology.
Dr. Nolan D. C. Lewis, Present Status of Shock Therapy.
Dr. Walter Freeman, Washington, D. C., Prefontal Lobotomy.
Dr. Lawrence S. Kubie, Types of Psychotherapy and Indications for Them.
Dr. Henry Alsop Riley, Migraine and Other Forms of Headache.
Dr. William G. Lennox, Boston, The Prevention and Treatment of Convulsive Disorders.

Morning panel discussions will cover poliomyelitis, psychoneuroses of the war, vitamins in disorders of the nervous system and psychotherapy. The clinical sessions will be held at various hospitals throughout the city. Exhibits will demonstrate recent advancements in the etiology, pathology, diagnosis, prophylaxis and treatment of disorders of the nervous system and will consist of charts, graphs, photographs, motion pictures, roentgenograms and specimens. A special exhibit of fresh pathologic material will be presented.

Refresher Course in Cardiovascular Diseases.—A course in cardiovascular diseases will open October 28 under the auspices of the New York Academy of Medicine and the New York Heart Association. Dr. Clarence E. de la Chapelle will give the first lecture, on "Management of the Acute Episode in Coronary Occlusion." Other lectures in the series will be:

Dr. Robert L. Levy, Management of the Patient from Acute Coronary Occlusion, November 25.
Dr. William Goldring, Management of Hypertension, December 23.
Dr. Edwin P. Maynard Jr., Brooklyn, Management of Cardiovascular Syphilis, January 27.
Dr. Harry Gold, Management of Heart Failure, February 24.
Dr. Irving S. Wright, Management of Peripheral Vascular Disease, March 24.
Dr. Currier McEwen, Management of Rheumatic Fever, April 28.
Dr. Arthur C. DeGraff, Management of Cardiac Arrhythmias, May 26.

PENNSYLVANIA

Fifty Years in Practice.—Five physicians who have completed fifty years of medical practice in Pennsylvania were given certificates, September 9, at a luncheon of the Second Councilor District of the Medical Society of the State of Pennsylvania. The physicians were Drs. Margaret Hassler, Reading; Neri B. Williams, Perkasie; Philip Jaisohn, Chester; Thomas F. Branson, Rosemont and Joseph Howard Cloud, Ardmore.

Philadelphia

Annual Postgraduate Institute.—The theme of the eighth annual postgraduate institute of the Philadelphia County Medical Society will be "Treatment of Medical Emergencies." The session is planned for April 27-30, 1943.

Personal.—Announcement is made of the death of Mr. George B. Johnson, secretary of the F. A. Davis Company. He was associated with this firm of medical publishers for nearly sixty-two years. Mr. Johnson died on September 7.

UTAH

State Medical Election.—Dr. James P. Kerby, Salt Lake City, was named president-elect of the Utah State Medical Association at its annual meeting in August and Dr. Louis E. Viko, Salt Lake City, was inducted into the presidency. Dr. Charles Leo Merrill, Salina, was chosen honorary president for this year. Other officers are Drs. David P. Whitmore, Roosevelt; Henry C. Stranquist, Ogden, and Oscar W. French, Coalville, vice presidents. Dr. Edward S. Pomeroy, Salt Lake City, was reelected treasurer. Dr. David G. Edmunds, Salt Lake City, is the secretary, and Mr. W. H. Tibbals, Salt Lake City, the executive secretary. The house of delegates voted its advice to the continuing committee of the Rocky Mountain Medical Conference to postpone the next meeting of the five state conference for the duration of the war and informally recommended that funds of the conference be invested in war bonds.

VIRGINIA

Changes Urged in Pneumonia Program.—The state epidemiologist has made certain recommendations for the pneumonia program to be carried on in the state during the coming year, based on a study of the work since it was initiated in 1940. The report suggests that only ten of the thirty-nine laboratories in the state should be kept stocked and closely supervised as typing stations. The recommendation was based on the fact that eighteen of the thirty-nine laboratories made no report of any sort last year and seven others did no laboratory work. It was urged that physicians should be better informed on the advantages of the services at the typing stations and that certain counties where pneumonia is prevalent be selected and used as experimental counties where the drugs would be distributed to all physicians. The study of case reports to evaluate the program and the establishment of immunization clinics for whooping cough to prevent the pneumonia deaths often complicating whooping cough in children were also suggested. The report has been approved by the pneumonia commission of the state medical society. When the pneumonia program opened in October 1940, thirty-nine laboratories, including the state laboratory in Richmond and its branches in Norton and Luray, were selected so that one was within 25 miles of every physician in the state and authorized to do typing, blood work, urinalysis and sulfapyridine determinations on indigent patients. When the physician's request card and a report of the laboratory work had been sent in, the laboratory was reimbursed by the state up to $10 per patient. Excluding the work done by the Medical College of Virginia, which is a consultant for the program and under contract to do all work sent to it, $1,184.50 was paid out to the laboratories in a period of eight months, Oct. 1, 1940 and June 30, 1941. This paid for laboratory work on 209 indigent patients at an average cost of $5.67 per person. In the next ten months, July 1, 1941-April 30, 1942 only $515 was paid to these same laboratories for work on 94 indigent patients. Analysis of the work revealed that these figures represented an approximately equal decrease in each laboratory test rather than an excessive decrease in any particular one. If those who were only given the drug are added to these figures, 381 were cared for during the first period and 144 in the second. The total figures for the Medical College of Virginia show the same decrease, 179 patients the first period and 94 the second.

WASHINGTON

Personal.—Dr. William L. Jackson, Burlington, has been named health officer of Skagit to succeed Dr. William V. King Jr.——Dr. Guy W. Kennicott has resigned as health officer of Chehalis.

Society News.—Dr. Walter C. Alvarez, Rochester, Minn., addressed the Pierce County Medical Society in Tacoma, September 22, on "Puzzling Types of Abdominal Pain."——The recent annual meeting of the Tacoma Surgical Club was addressed by Dr. Leo Eloesser, San Francisco, on "Fractures in War Time" and "Trauma of the Lung."

Special Lecture Series.—Dr. Hans Lisser, clinical professor of medicine, University of California Medical School, San Francisco, gave a special group of lectures in Seattle, September 26, under the auspices of the University of Washington Extension Course, King County Medical Society and the Seattle Academy of Medicine. His subjects were "The Indications for and Methods of Administering Male Hormone Preparations," "Clinical Experiences with Newer Improved Female Sex Hormone Preparations" and "Obesity: Discussion of Its Problems and Management."

WISCONSIN

Marquette Discontinues Fifth Year.—Because of the irregularities of graduation occasioned by the acceleration of the program of studies for the duration of the war, the executive faculty of Marquette University School of Medicine has decided to discontinue the fifth or intern year as a requirement for the degree of doctor of medicine. The present fourth year class will be graduated and receive the degree of doctor of medicine about the middle of February 1943. This change in policy necessarily brings about a change in the relationship between the university and the hospitals in which graduates will serve their internships in the future. Under the new ruling the university is asking to be released from the contract it has signed with these hospitals, believing that it cannot supervise students who have already graduated. The university promises its cooperation with the hospitals, however, in that it will require from four year students who have contracts with hospitals that, as a condition of graduation, they promise on their honor to fulfil their part of the contract as perfectly as if the contract had not been changed in any way.

WYOMING

Personal.—Dr. Dorsey S. Lenz, formerly of Edgerton, has been appointed health officer of Campbell County.——Dr. Philip D. Ketchum, health officer of Laramie County, was recently appointed health officer of Cheyenne, succeeding Dr. Walter S. Kotas, who entered army service.

State Medical Election.—Dr. Earl E. Whedon, Sheridan, was named president-elect of the Wyoming State Medical Society at its recent annual meeting in Cheyenne, and Dr. George H. Phelps, Cheyenne, was inducted into the presidency. Dr. Roscoe H. Reeve, Casper, was elected vice president and Drs. Marshall C. Keith, state health officer, and Frederick L. Beck, both of Cheyenne, were reelected secretary and treasurer, respectively. The society agreed to discontinue its annual convention for the duration of the war.

GENERAL

Dr. Rhoads Awarded Caldwell Medal.—The Caldwell Medal of the American Roentgen Ray Society was presented on September 16 to Dr. Cornelius P. Rhoads, director of the Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, during the society's annual meeting in Chicago. The medal is presented for distinguished work in cancer research.

Examination in Dermatology and Syphilology.—The American Board of Dermatology and Syphilology announces that a written examination will be held in various cities throughout the country on October 12. The oral examination will be in Chicago, December 4-5. Application for group A must be received by the secretary, Dr. C. Guy Lane, 416 Marlboro Street, Boston, by October 12.

Sister Kenny Awarded Gold Key.—The gold key, awarded annually by the American Congress of Physical Therapy, has been presented to Sister Elizabeth Kenny, an Australian nurse, as the person "who has made the greatest contribution to the field of physical therapy during the past year." The congress reported that the Kenny method of treating infantile paralysis at the Minneapolis General Hospital has been increasingly studied and copied by the medical profession.

Special Society Elections.—Dr. Kristian G. Hansson, New York, was chosen president-elect of the American Congress of Physical Therapy at its annual congress in Pittsburgh in September, and Dr. Fred B. Moor, Los Angeles, was installed as president.——Dr. Joseph H. Globus, New York, was recently elected president of the American Association of Neuropathologists. Other officers included Drs. Harry M. Zimmerman, New Haven, Conn., vice president, and Armando Ferraro, 150 East Ninety-Third Street, New York, secretary-treasurer.

Awards to Chemists.—The Francis P. Garvan gold medal, honoring women in chemistry, was presented to Florence B. Seibert, Ph.D., associate professor of biochemistry at the Henry Phipps Institute, Philadelphia, for "distinguished work on the chemistry of tuberculosis" during the recent annual session of the American Chemical Society. The $1,000 American Chemical Society Prize in pure chemistry, given annually for outstanding research in pure chemistry by a man or woman less than 36 years old, was presented to John L. Oncley, Ph.D., Harvard Medical School, Boston. Dr. Seibert received her degree of doctor of philosophy at Yale University, New Haven, in 1923 and Dr. Oncley received his Ph.D. at the University of Wisconsin, Madison, in 1932.

Red Cross Receives Army-Navy E.—The American Red Cross Blood Donor Service received the Army-Navy E award at special ceremonies in Washington, September 15. The presentation was made by Samuel Kurtz, a torpedoman who lost both legs in the torpedoing of the U. S. S. *Kearny*. Torpedoman Kurtz, whose life was saved by twelve plasma transfusions, raised the Army-Navy E pennant over National Red Cross Headquarters. The Army-Navy E pin was presented to Dr. G. Canby Robinson, Baltimore, head of the American Red Cross Blood Donor Service. Reports from representatives from eighteen blood donor centers in principal cities revealed that to date 735,759 pints of blood had been collected by the American Red Cross.

League of Nursing Education Recommends Accelerated Program.—The board of directors of the National League of Nursing Education, in consideration of the great demand for graduate nurses for military and civilian services, has agreed on the following group of recommendations to meet the war emergency:

That schools offering the three year curriculum plan to complete within thirty months all organized instruction and clinical experience in at least the four major services medicine, surgery, obstetrics and pediatrics, leaving six months free for supervised practice wherever needed in the hospital. This arrangement would also make it possible, should a plan be worked out in cooperation with army and navy hospitals, for students who choose to go into military service to have such an affiliation during this six months; or later, if the need becomes more acute, students might be released to enter military service at the end of the thirty months.

That, where state laws permit, an accelerated program be planned for students admitted with two to four years of approved college preparation which would make it possible for such students to be graduated at the end of twenty-four to twenty-eight months. The length of time should be determined on the basis of the previous educational preparation of the student and her level of achievement in the school.

That schools of nursing critically examine their curriculums and eliminate duplications in instruction and nonessential activities, giving emphasis to those elements in the curriculum that are most vital in terms of present and probable future needs.

That every effort be made to extend the use of auxiliary personnel in so far as this can be done with safety to the patient.

That, in view of the greatly enlarged number of student nurses and auxiliary personnel in hospitals, definite measures be taken to retain and stabilize teaching and supervisory staffs to provide for the adequate preparation of students and the proper supervision of auxiliary workers.

Academy of Physical Medicine.—The twentieth annual meeting of the American Academy of Physical Medicine will be held at the Statler Hotel, Boston, October 14-17, under the presidency of Capt. William Seaman Bainbridge, M. C., U. S. Naval Reserve, New York. The first session will be devoted to a consideration of "Physical Medicine in the Services" with the following speakers: Col. Edgar Erskine Hume, M. C., U. S. Army, Carlisle, Pa., in army activities; Capt. William E. Eaton, M. C., U. S. Navy, Great Lakes, Ill., in the naval hospital; Dr. Charles M. Griffith, Washington, D. C., in the veterans administration; Dr. Andre William Reggio, Boston, the role of the physician in civilian defense; Sir Robert Stanton Woods, London, read by Dr. William D. McFee, Boston, the care of the civilian casualties in England, and Drs. Frank H. Krusen and Earl C. Elkins, Rochester, Minn., the teaching of physical medicine in relation to the war effort. Other speakers on the program will include:

Dr. Frank H. Lahey, Boston, Some Problems of Medicine in Relation to the War.
Kurt S. Lion, D.Eng., Cambridge, Mass., Method of Determining Dosage and Local Distribution in Short Wave Therapy.
Drs. Walter J. Zeiter and Albert D. Ruedemann, Cleveland, Further Observations on the Use of Short Wave Diathermy in Lesions Involving the Orbit.
Dr. Frank R. Ober, Boston, Physical Medicine in the Treatment of Lame Backs.
Francis O. Schmitt, Ph.D., Cambridge, Biologic Investigation of Medical Interest with the Electron Microscope.
Robert S. Harris, Ph.D., Cambridge, Appraisal of Nutritional Status in Human Beings.
Dr. Herman A. Osgood, Boston, The Treatment of Epithelioma by Electrosurgery and by X-Rays.

A symposium on the after-care of poliomyelitis will be a feature of the meeting on Friday with the following speakers: Drs. Ober William Benham Snow, New York; Kristian G. Hansson, New York; William T. Green, Boston; Mark Joseph Daley, New York, and Robert L. Bennett Jr., Warm Springs, Ga. Dr. Winfred Overholser, Washington, D. C., will deliver the Arthur H. Ring Foundation Lecture Friday evening. On Saturday morning the practice of physical medicine at the Massachusetts General Hospital will be shown in case presentations covering the peripheral nerve injuries, poliomyelitis and rheumatoid arthritis.

CORRECTION

Arteriosclerosis with Diabetes Mellitus.—In the article by Lisa, Magiday, Galloway and Hart in THE JOURNAL, September 19, two words are transposed in the last two conclusions, page 195. They should read "arteriolar sclerosis of the kidneys" and "peripheral arteriosclerosis."

Government Services

Dr. Seeger Named Industrial Hygiene Consultant

Dr. Stanley J. Seeger, Texarkana, Texas, chairman of the Council on Industrial Health of the American Medical Association, has been named consultant to the division of industrial hygiene of the National Institute of Health, according to *Industrial Hygiene*. Dr. Seeger will maintain contact with the state and county medical societies to acquaint physicians with the growing importance and demands of practice.

Census Bureau Provides Health Services for Employees

A health program providing extensive medical facilities for its employees has been inaugurated by the Census Bureau in its new building at Suitland, Md., according to the Washington *Star*. Dr. Leon Schwartz of the U. S. Public Health Service is in charge. Preplacement physical examinations will be made, supplementing those required for employment by the Civil Service Commission. Illnesses or injuries that develop during the day's work will be treated. Advice will be given to employees, but actual treatment will be left to the family physician. Health records will be kept for each worker, and studies will be carried on to prevent or reduce loss of time due to occupational and other diseases.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 21, 1942.

The Treatment of Malaria

In losing Java the Allies lost more than 90 per cent of the world's supply of quinine, and the treatment of malaria was made more difficult. In opening a discussion at the Royal Society of Tropical Medicine and Hygiene, Sir Samuel Rickard Christophers said that up to ten years ago the only specific drug of any distinct potency was quinine, though the other cinchona alkaloids were useful. Besides these, various derivatives of the quinine type, notably hydroquinone, were considered by some to be even more effective than quinine. But it was doubtful whether the total alkaloids or any derivatives could meet the demand for efficient substitutes, and we must turn to the recently developed synthetic antimalarials, of which mapacrine and pamaquin were well established. Plasmochin (which is called pamaquin in England) had the remarkable property of acting on the sexual forms of the parasite, but attempts to control malaria in communities through this action had not met with much success, though it might reduce the spread of infection in hospitals. It was more and more used as a sort of adjuvant to quinine or atabrine (which in England is called mepacrine), especially in after-treatment and so-called prophylaxis. But it was now rarely used in the acute disease because it was rather toxic and not very effective against the asexual stages of the falciparum parasite. Many considered that it had a beneficial effect in reducing liability to relapses, especially when used in after-treatment or prophylaxis with the more active schizontocidal drugs quinine and atabrine. It was not a satisfactory substitute for quinine in the acute disease.

But atabrine was generally accepted as at least as effective as quinine in the acute disease in reducing liability to relapse and in so-called prophylaxis. Since all our ideas regarding treatment have been built up on quinine, Christophers summarized present views as to this drug. We were not now so insistent in timing our doses to catch the sporulation forms but tried to ensure a sufficiency of quinine in the blood throughout the period of treatment. We now knew that the heroic doses once given were useless. We do not give more than 30 grains (2 Gm.) in a day and many consider 20 grains (1.3 Gm.) adequate in acute malaria. We also now knew that it was useless to try to eradicate infection by unduly long administration. About seven days' treatment was suitable to cover the period of the attack. For so-called prophylactic use there were two common methods, 5 or 7 grains (0.32-0.45 Gm.) daily or 15 grains (1 Gm.) on two successive days in the week. In the main these results were applicable to atabrine. We did not give more than 0.3 Gm. daily in three doses of 0.1 Gm. The toxicity apparently was not great. There was liability to some gastrointestinal and nervous effects. Atabrine had a cumulative effect, so that its administration should be watched. In the acute attack it was usually given for not more than seven days and, if necessary, repeated after an interval. In prophylaxis the dosage must be cautious, 0.2 Gm. on two successive days in the week or even at longer intervals. It gave rise to a yellow coloration of the skin, but this was not harmful. Atabrine had an advantage over quinine in its suitability for intramuscular injection. In the ordinary case it was best given orally, but if there were cerebral or other pernicious manifestations parenteral administration was necessary. With quinine, on the other hand, careful intravenous injection was the method. Intramuscular use was unjustified, as absorption was too slow. Moreover, a necrotic mass formed and might lead to tetanus or sloughing.

A Well Balanced Diet in Pregnancy

A medical committee appointed by the People's League of Health to investigate the nutrition of expectant and nursing mothers has for the first time obtained clear evidence of the importance of diet. A survey was made of the records of over five thousand women and is believed to be the most comprehensive ever carried out. The object was to show whether the addition of the appropriate vitamins and minerals to the daily food would have a beneficial effect on the course of pregnancy and labor and on the newborn child. In general there was no especial deficiency in the diets of first class protein, but a shortage of calcium was found in about 70 per cent of the women, most of whom were taking insufficient milk and cheese. There was a greater deficiency of iron, only 2 per cent having a satisfactory intake. There was much deficiency of vitamins. More than half of the women took insufficient vitamin A. Vitamin B_1 insufficiency was less noticeable; the diets were not badly defective, but nearly half the women were not taking as much as was desirable. The same held for vitamin C. The committee decided on a daily supplement to the deficient diet of saccharated carbonate of iron 18 grains (1.15 Gm.), calcium lactate 30 grains (2 Gm.), iodine, manganese and copper minute quantities, adsorbate of vitamin B_1 15 grains (1 Gm.), vitamin C 100 mg. and halibut liver oil (vitamins A and D) 6 minims (0.4 cc.).

In the antepartum clinics at which the experiment was made the women were divided into two groups, of which one received the supplements and the other did not but acted as a control. The first investigation was of the toxemia of pregnancy. Cases were regarded as toxemic which showed a systolic blood pressure of or above 140 mm. of mercury or a diastolic pressure of 90, with or without albuminuria, edema and so on or in which there was no hypertension and the diagnosis was based on albuminuria. In 1,530 primigravidas who received the supplementary diet the toxemia percentage was 27.1; in those who did not it was 31.7. This result was striking and indicated a protection by the supplementary diet of almost 30 per cent.

Evidence was also obtained of benefit to the infant. Of 1,529 primigravidas receiving the supplement the pregnancy ended prematurely (before the fortieth week) in 308; in 1,512 not receiving it the number was 361. The investigation was held to show the benefit to mother and child of a well balanced diet in pregnancy.

Depletion of the Staff of a Famous Hospital

The war has had a profound effect on medical service in the country. A high proportion of the doctors—practically all the younger ones—have been taken into the fighting forces. The staffs of the hospitals have been depleted. In his annual report for 1941 to the governors of Guy's Hospital, the treasurer, Lord Nuffield, referred to the large numbers of the staff, medical, nursing and lay, now on active service. He reminded the government departments concerned, and particularly the Ministry of Labor, that further depletion of the ranks of the hospital's experienced staff must react very unfavorably on the work that it was able to do. An appointments system had been introduced for outpatients whereby the interval between the patient's arrival and his examination by the medical staff had been reduced to a minimum. Guy's Hospital was playing a predominant part in the work of the busiest and most exposed of all the sectors into which London had been divided for dealing with the casualties of air raids.

Raw Vegetables in School Meals

The Board of Education has informed local education authorities that, owing to lack of fruit, particularly oranges, school meals should include a helping of raw vegetables several times a week or, if possible, every day. In the absence of fruit,

vegetables are the main source of vitamin C, but this is usually destroyed by cooking. Special efforts are to be made to introduce raw vegetables into the dietary before next winter. Authorities are advised to give about 1 ounce of salad or sliced vegetables twice or thrice a week and gradually to increase the amount to 2 or 3 ounces.

PARIS

(From Our Regular Correspondent)

July 27, 1942.

Research on Shock

Traumatic shock was studied again in France during 1940 by the medical department of the French army, which organized a liaison service between the clinical observations made on the battlefield and the experimental research performed in the back areas. Antishock centers have been organized. The Comité national des recherches scientifiques has founded a committee to study shock comprising surgeons, physicians and biologists. Prof. Leon Binet, author of a book on hemorrhage, shock and asphyxia published in 1941, is an eminent collaborator of this committee. In a recent meeting of the Société des chirurgiens de Paris he gave a report of his work since 1940, performed chiefly on dogs. He has used in experimental shock the method known as histamine shock. A solution of histamine hydrochloride in a dose of 2.5 mg. per kilogram of body weight is intravenously injected into an anesthetized animal. The arterial tension is lowered immediately and the respiratory rhythm becomes irregular. Ten minutes after the first injection a second dose of 2 mg. is given. A bronchial spasm with collapse and dyspnea appears. Generally the animal dies, if left to itself, in thirty to sixty minutes. An interesting biologic phenomenon is the increase in red blood cells, contrary to the classic anemia due to hemorrhages. The number of red cells increases from 6 million (normal for dogs) to 7-9 millions. There is no evidence of mobilization of red cells by contraction of the spleen as in the case of asphyxia. In histamine shock there is a hemoconcentration by alteration of the capillary permeability, especially of the abdominal capillaries, which manifests itself by an escape of water from the blood into the body tissues. The plasma leaves the blood vessels and a progressive reduction of the blood mass results. Binet gives an intravenous injection rapidly, to restore fluid, 500 cc. of a solution consisting of sodium chloride 8 Gm., sodium bicarbonate 8 Gm., sodium thiosulfate 4 Gm. and distilled water to make 1,000 cc. Dextrose is not added because there is already a hyperglycemia. Sodium bicarbonate is added because there is a precocious and accentuated falling of the total carbon dioxide in the plasma. After this injection an increase in the arterial tension and disappearance of the respiratory difficulty are observed. But this improvement is only transitory in severe cases. For the very severe cases Binet follows up after the previous injection with an injection of diluted blood, that is 3 parts of serum and 1 part of preserved blood. Binet proposes the following formula for diluting the blood: distilled water 1 liter, sodium chloride 8 Gm., sodium bicarbonate 1.5 Gm. and sodium thiosulfate 4 Gm. This experience on a large scale with dogs led to experiments on human beings in 1940 with good results. These experiments on 150 dogs are part of a movie picture. In the meantime, several surgeons, among others Professor Luguet, have obtained good results with the solution proposed by Binet.

The Present State of French Children

At a recent meeting of the Académie de médecine Jules Hubert, Collesson and Roueche of the Comité national de l'enfance (the director of which, Professor Marfan, died recently) reported on a survey questionnaire addressed to 463 physicians on the general mortality and morbidity, on the health of children, on nutrition in general, on vitamin deficiencies and on the frequency of tuberculosis. Among the answers were 119 from departmental inspectors, directors of boards of health, pediatricians, physicians and medical inspectors of schools. This inquiry is still going on but it is already possible to indicate the first general trends. Mortality and morbidity are not higher in the different age periods of these children. A recrudescence of rickets is indicated. Skin infections, scabies and parasites of the hair are constantly increasing. Last winter cases of freezing and chilblains in enormous numbers occurred. Troubles of the endocrine genital functions chiefly in girls were observed. The prolonged deficiencies of protein, fat and vitamins have caused syndromes of pellagra and other diseases. Most serious, however, is the frequent appearance of miliary tuberculosis and of caseous pneumonia.

The most common complaint in these reports is the danger to children due to food insufficient in calories and lacking animal proteins and mineral salts.

At a recent meeting of the Académie de médecine H. Gounelle, A. Valette and Moine presented the results of a survey of 1,075 Paris school children, which revealed that their height and weight are declining. In comparison with tables compiled in 1935 by A. B. Fessard, a decrease of 1 to 5.5 cm. in boys aged 5 to 12 years and of 1.5 to 2 cm. in girls of the same age is stated. The same trend in their weight is reported.

The Effect of Food Deficiencies on the Blood

In a previous letter it was indicated that food restrictions have created new pathologic conditions in France. This new problem has been studied in various clinics and laboratories. At a recent meeting of the Académie de médecine Jean Girard, Pierre Louyot and Marcel Verdin reported their studies of 90 persons mostly workmen, chauffeurs, engineers, unskilled laborers and fitters who complained of progressive weakness which appeared on awakening in the morning, increased during morning hours and decreased after lunch. The accompanying vertigo sometimes gave the feeling of a cerebral vacuum and compelled the person to lean against something or sit down. This condition resulted in incapacity to work, and certain patients had to go to bed. They suffered nocturnal perspiration and became very sensitive to cold, even during summer. This state was accompanied by psychic depression and apathy. In several cases their relations wanted them to be interned in an asylum. Arterial hypotension was present, loss of weight and paleness of the skin, without any relation to the figures for the hemoglobin or the red blood cells. All these syndromes can be ascribed to the present food shortage. Very interesting are the results of various examinations: an increase of the bleeding time, a hypoglycemia below 0.85 per cent in 70 per cent of the patients, a hyposcorbemia in 70 per cent of the patients, the vitamin C being below 8 mg., a mononucleosis in 58 per cent of the patients, an eosinophilia, an increase in red blood cells in 53 per cent of the patients and a slight anemia in 25 per cent of the patients. All these results are due to alimentary shortages. The reporters refrain from making definitive conclusions concerning the prognosis for these asthenic patients.

Smallpox

In February smallpox broke out in Paris, the first cases appearing in the surgical service of the Hôpital St. Louis, the next ones in the Hôpital des Enfants malades and in the Hôpital Bichat and then cases appeared also in town. The Académie de médecine has claimed that a general and massive revaccination should be ordained. Vaccination is obligatory in France during the first, tenth and twentieth years, but the law is far from being observed. A modification established by the law of 1915 states that in case of war, epidemics or threat of epidemics vaccination can be made obligatory by decree or by orders of a prefect for everybody, no matter what his age, if he has not been vaccinated or revaccinated successfully within five years. In the last claim of the Académie de médecine this delay has been diminished to three years.

An epidemic appeared in 1919 at Lyons with 912 cases and 167 deaths. In 1933 an epidemic occurred at Rouen with 21 cases. In the 1942 epidemic in Paris the disease was generally mild. Its origin has not been discovered. In the Hôpital Pasteur, Louis Martin observed that, contrary to other infections, smallpox baffled all isolation measures. Only massively performed vaccinations are efficacious. At a recent meeting of the Société médicale des Hôpitaux de Paris, Flandin and Milhit said that a striking effect of the present revaccination of citizens is the sensitiveness to vaccine. Positive vaccinations have been present in 70 to 80 per cent. Formerly in vaccination at schools and in the army positive vaccinations were only 20 per cent. Explaining this fact, Lereboullet and Halle maintained at this meeting that the sensitiveness is due to the greater action of the vaccine now in use. They propose to make no more than two superficial scarifications of 1 to 2 mm. in length and rather distant from each other. Often one is enough. All these facts accentuate the necessity of undertaking a campaign for the general vaccination of the population.

Whooping Cough and Tuberculosis

In the Société de pédiatrie de Paris R. A. Marquezy, Melle M. Ladet and Mmé. Cans recently reported observations in the Hôpital Claude Bernard during the years 1937-1941 in 289 cases of whooping cough in children whose cutaneous reaction to tuberculin was positive before the whooping cough. In one group are children suffering with slight tuberculosis of the lungs characterized by a positive cutaneous reaction with a radiographic picture as good as normal. Among 145 cases there was no activation of previous pulmonary lesions, although in certain cases the whooping cough became complicated with acute pneumonia. In a second group are children who had both whooping cough and active tuberculosis of the lungs. Among 53 cases, 14 were fatal. The condition is extremely dangerous in cases of extensive nodular tuberculosis, but generally whooping cough and pulmonary tuberculosis seem to evolve separately.

At the same meeting Julien Marie discussed his observations made in 1941 on 555 children with whooping cough, of whom 83 also had tuberculosis. The mortality of the tuberculous was double that of the nontuberculous children.

BUENOS AIRES

(From Our Regular Correspondent)

Aug. 22, 1942.

Public Health in Peru

The government of Peru has increased the budget for expenses on public health to 14 per cent more than that of last year. The following national departments were recently established: an antituberculosis department with centers for the care of patients of several categories in various regions of the country, a department of epidemiology for sanitary work concerning prevention and control of epidemics as well as for the preparation of statistics and a department for work on rural sanitation and work against malaria. Attention is being given to the plan presented by John Winant, LL.D., the ex-president of the International Labor Office, who is now the ambassador of the United States to Great Britain, for waging antituberculosis campaigns. Vaccination against rural yellow fever is obligatory. It is given without any charge to persons who live in certain territories, which have been specified by the General Department of Public Health as foci of the disease. The persons living in those territories who do not want to have the vaccine and who are not immune are subject to a fine. The number of centers of the National Department against Plague, the personnel for clinical and laboratory research against plague and the number of antiplague units have increased. The work against venereal diseases is intensified especially in the region of the port of Callao. Sanitary campaigns against endemic diseases and work for sanitation of the Peruvian selva are organized. The central laboratory of the government, which is established in the selvatic region, is in charge of the technical exploitation of many valuable plants which are of great industrial importance. The protection of mothers and children is constantly improving through the coordinated work of proper organizations, mainly the so-called ambulance for infantile hygiene, the Hospital del Niño and the Instituto Nacional del Niño. The latter organization has given medical care to more than 225,000 children, lunches to more than 55,000 pregnant women, medicine, dietetic products and about 290,000 liters of milk to children, and odontologic care, vaccines against several diseases and more than 2,400,000 lunches to school children in the various provinces. Work is carried on for increasing the number of hospitals, which is insufficient. There are seventy-two hospitals with a total number of 8,636 beds in charge of the societies of public welfare. The National Department of Industrial Hygiene, which is a branch of the Ministry of Public Health Work and Social Welfare, was recently established. The department is in charge of the prevention of industrial diseases, especially in miners. However, later on it will be in charge of the prevention of industrial diseases in workers in all industries in the country. The department is in charge also of sanitary control of houses of industrial workers and of administration of medical care to industrial workers.

Scientific Relations Between Argentina and Brazil

The scientific relations between Argentina and Brazil are close. Groups of physicians of each country make visits to the other country for the exchange of scientific knowledge. Books of Brazilian medicine have been recently translated into Spanish under the honorary direction of Dr. Mariano Castex, professor of clinical medicine of the Faculty of Medicine of Buenos Aires and under the active direction of Dr. Egidio S. Mazzei and Elyeser Magalhaes. The volumes of this collection have been translated into Spanish with the aim of enabling Spanish speaking physicians to know some of the most important books of their Brazilian colleagues. Dr. José Silveira's book "Atelectasia y Tuberculosis Pulmonar" is the first one of this collection to be translated. Three other books are going to be translated and published in the near future: (1) "Enfermedades del Higado: Diagnóstico, Patología, Terapéutica," by Dr. Clementino Fraga, (2) "Aneurismas Aórticos," by Dr. A. de Almeida Prado and (3) "Propedéutica Radiológica," by Prof. Manuel de Abreu. All these books are edited by the publishing house "El Ateneo" of Buenos Aires.

Conference Against Echinococcosis

The National Conference against Echinococcosis was held in Buenos Aires in May, with physicians and veterinarians participating. Several plans for carrying on systematic study of the infection in different regions and of developing various methods for its prevention were approved. It was resolved that laboratory and clinical research be intensified in order to discover a biologic method for an early diagnosis of echinococcosis. It was also resolved to give antihelminthic therapy to any dog which is brought in to the country, even for a short time.

Crusade Against Flies

Studies are in progress in the National Department of Hygiene to discover some means against reproduction of flies. The crusade will be nationwide. Dr. John D. Long, the representative of the Pan American Sanitary Bureau of Washington, comes to Argentina once a year as a rule. He has directed the attention of the sanitary authorities on the extraordinary abundance of flies in Buenos Aires.

Deaths

Charles Howard Moore ● Philadelphia; Medico-Chirurgical College of Philadelphia, 1907; specialist certified by the American Board of Orthopaedic Surgery, Inc.; associate professor of orthopedics at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania; member of the American Academy of Orthopaedic Surgeons; consulting orthopedist to the U. S. Public Health Service in 1928; served as a major in the medical corps of the U. S. Army during World War I; for many years chief of the orthopedic staff of the Delaware Hospital, Wilmington; orthopedic surgeon on the staff of St. Mary's Hospital from 1923 to 1926; author of "Knee Joint Fractures"; aged 62; died, September 10, in the Presbyterian Hospital.

Carl Phillip Wagner ● Portland, Conn.; University of Nebraska College of Medicine, Omaha, 1928; specialist certified by the American Board of Psychiatry and Neurology, Inc.; member of the American Psychiatric Association, the New England Society of Psychiatry and the American Orthopsychiatric Association; assistant in psychiatry at the Columbia University College of Physicians and Surgeons, New York, since 1934; at one time instructor in psychiatry at the Yale University School of Medicine, New Haven, Conn.; psychiatric examiner for the U. S. Army induction center in Hartford; medical superintendent and owner of the Elmcrest Manor; aged 44; died, August 10, in the Hartford Hospital of coronary thrombosis.

Wallace Belding House, New York; New York Homeopathic Medical College and Hospital, New York, 1899; emeritus professor of neurology and psychiatry at his alma mater; at one time professor of neurology at the College of the New York Ophthalmic Hospital; for many years attending neurologist and psychiatrist at the Flower and Fifth Avenue hospitals, consulting neurologist and psychiatrist at the Metropolitan Hospital, consulting psychiatrist at the Middletown (N. Y.) State Homeopathic Hospital and consulting neurologist at the Fitkin Memorial Hospital, Neptune, N. J.; aged 71; died, July 20, in South Norwalk, Conn., of heart disease.

Rudolph Jacoby ● Boston; Boston University School of Medicine, 1911; professor of dermatology and syphilology at his alma mater; specialist certified by the American Board of Dermatology and Syphilology; member of the American Academy of Dermatology and Syphilology; past president of the New England Dermatological Society; chief of the department of dermatology and syphilis, Massachusetts Memorial Hospitals; consulting dermatologist, Westboro (Mass.) State Hospital, Leonard Morse Hospital, Natick, Mass., and the Anna Jacques Hospital, Newburyport, Mass.; aged 52; died, August 20.

Harry Gaylord Willard ● Tacoma, Wash.; Rush Medical College, Chicago, 1904; past president of the Washington State Medical Association and the Pierce County Medical Society; president of the North Pacific Surgical Association; member of the American Association for the Surgery of Trauma; fellow of the American College of Surgeons; served as a major in the medical corps of the U. S. Army during World War I; member of the staffs of St. Joseph's and Tacoma General hospitals; district surgeon, Chicago, Milwaukee, St. Paul and Pacific Railway; aged 67; died, August 28.

John Luverne Hemstead ● Albany, N. Y.; Albany Medical College, 1916; assistant in medicine from 1917 to 1919, associate from 1929 to 1932, clinical professor from 1932 to 1937 and since then associate professor of medicine at his alma mater; specialist certified by the American Board of Internal Medicine; served as a first lieutenant in the medical corps of the U. S. Army during World War I and as an instructor at the Army Medical School; aged 49; for many years on the staffs of the Memorial Hospital and the Albany Hospital, where he died, August 22.

Henry Wilberforce Aikins, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1881; Victoria University Medical Department, Coburg, Ont., 1881; for many years registrar of the College of Physicians and Surgeons of Ontario; at one time associate professor of anatomy at the University of Toronto Faculty of Medicine; formerly senator and member of the board of regents of Victoria University; for many years a medical director of the Continental Life Insurance Company; aged 85; died, July 29.

Emil Altman, New York; College of Physicians and Surgeons, New York, 1895; member of the Medical Society of the State of New York and of the American Psychiatric Association; for many years chief examiner of the medical division of the city board of education; served during World War I and at the time of his death was a colonel in the medical reserve corps of the U. S. Army; aged 69; consulting neuropsychiatrist at the Beth Israel Hospital, where he died, September 11.

Herman Clay Frauenthal, New York; Bellevue Hospital Medical College, New York, 1897; member of the Medical Society of the State of New York; taught traumatic surgery and orthopedics to officers in the medical corps of the U. S. Army during World War I; aged 75; a founder, consultant in orthopedics and for many years chairman of the medical advisory board of the Hospital for Joint Diseases, where he died, August 23, of carcinoma of the rectum.

Francis Bacon Camp ● Springfield, Mo.; Emory University School of Medicine, Atlanta, Ga., 1922; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; aged 45; on the associate staff of the Burge Hospital and the Springfield Baptist Hospital; one of the founders of the library and on the active staff of St. John's Hospital, where he died, August 11.

John Joseph White, New York; University and Bellevue Hospital Medical College, New York, 1899; medical officer in the city fire department since 1907; an organizer and for many years treasurer of the International Association of Police and Fire Surgeons and Medical Directors of Civil Service Commissions; aged 66; died, July 23, in the New York Post Graduate Medical School and Hospital following an operation for carcinoma of the stomach.

Charles Eckert Rowe, Syracuse, N. Y.; Syracuse University College of Medicine, 1916; member of the Medical Society of the State of New York and of the American Psychiatric Association; medical superintendent of the Syracuse State Hospital; formerly on the medical staffs of the Hudson River State Hospital, Poughkeepsie, and the Binghamton (N. Y.) State Hospital; aged 53; died, July 30, of coronary occlusion.

Sherman Sedgwick Hesselgrave, Center City, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1894; served as a lieutenant in the medical corps of the U. S. Army during World War I; lieutenant colonel, U. S. Army reserve corps; aged 70; died, August 12, in the Midway Hospital, St. Paul, of ruptured abdominal aorta.

Harvey Willis Crook, Bishop, Calif.; California Eclectic Medical College, Los Angeles, 1914; member of the California Medical Association; past president of the Inyo-Mono Counties Medical Society; for many years city and county health officer; examining physician for the county Selective Service System; aged 69; died, August 2, of heart disease.

Le Roy Happer Cheesman, Mount Lebanon, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1903; member of the Medical Society of the State of Pennsylvania; veteran of the Spanish-American War; commissioned a captain in the medical corps of the U. S. Army in 1919; for many years on the staff of the Pittsburgh Dispensary and the Passavant Hospital; Pittsburgh; aged 66; died, August 15.

Raymond Arthur Ramsey ● Columbus, Ohio; Western Reserve University Medical Department, Cleveland, 1912; aged 55; on the staffs of the Children's Hospital, University Hospital, Mount Carmel Hospital, St. Francis Hospital and the Grant Hospital, where he died, August 19, of prostatic hypertrophy and postoperative hemorrhage.

Samuel W. Hopkins ● Walnut, Ill.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; an Affiliate Fellow of the American Medical Association; past president of the Bureau County Medical Society; at one time president of the village board; aged 75; died, August 11, of coronary occlusion.

John Daniel Matz, Allentown, Pa.; Medico-Chirurgical College of Philadelphia, 1907; member of the Medical Society of the State of Pennsylvania; served as a captain in the medical corps of the U. S. Army during World War I; on the staff of the Allentown Hospital; aged 72; died, August 13, of coronary occlusion.

Robert Ernest Gilbert, Winter Haven, Fla.; Atlanta (Ga.) Medical College, 1914; member of the Florida Medical Association; past president of the Polk County Medical Society; served during World War I; aged 51; died, August 6, in Meridian, Miss., of cerebral hemorrhage and chronic myocarditis.

Alva Andrew Young, Hammond, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1905; served as a lieutenant in the medical corps of the U. S. Army during World

War I; aged 60; died, August 9, in the Veterans Administration Facility, Hines, Ill., of hypertension and coronary sclerosis.

Benjamin Comer Routon ● Ashdown, Ark.; University of Arkansas School of Medicine, Little Rock, 1938; associate on the staff of the Texarkana (Texas) Hospital and the Michael Meagher Memorial Hospital, Texarkana; aged 29; died, July 19, of cardiovascular accident due to an injury.

Lee Jackson Wall, Easley, S. C.; University of Nashville (Tenn.) Medical Department, 1891; Vanderbilt University School of Medicine, Nashville, 1891; member of the South Carolina Medical Association; aged 84; died, August 6, of chronic myocarditis, chronic nephritis and arteriosclerosis.

James Clyde Overall ● Murfreesboro, Tenn.; Chattanooga (Tenn.) Medical College, 1907; member of the Radiological Society of North America, Inc.; on the staffs of the Rutherford Hospital and of the Veterans Administration Facility; aged 60; died, August 9, of coronary occlusion.

Warren Hastings Smith, Newton, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1899; member of the Medical Society of New Jersey; served as a member of the board of education; aged 68; died, August 10, in Rochester, N. Y., of cerebral hemorrhage due to a fall.

William Sidney Bowers, Los Angeles; College of Physicians and Surgeons, Los Angeles, 1919; member of the California Medical Association; on the staff of the Children's Hospital; aged 47; died, September 4, in the Good Samaritan Hospital of chronic cardiorenal disease.

Joseph Edward Preucel, Colfax, Wash.; Rush Medical College, Chicago, 1895; member of the Washington State Medical Association; served in the medical corps during World War I; on the staff of St. Ignatius Hospital; aged 74; died, July 13, of carcinoma of the prostate.

John D. McGregor, Chicago; Rush Medical College, Chicago, 1891; member of the Illinois State Medical Society; at one time city physician; for many years president of the staff of the Sisters of St. Anthony de Padua Hospital; aged 72; died, August 5, of acute peritonitis.

Jerrard Willard Coombs ● Camden, Ohio; St. Louis College of Physicians and Surgeons, 1896; Medico-Chirurgical College of Philadelphia, 1906; for many years served as a member of the board of education; aged 70; died, August 6, of carcinoma of the liver.

George F. Hamel ● Kansas City, Mo.; Beaumont Hospital Medical College, St. Louis, 1888; also a pharmacist; for many years division surgeon for the Missouri Pacific Railway; on the staff of the St. Mary's Hospital; aged 82; died, July 3, of cerebral hemorrhage.

Leonard Forrest Woodworth ● Le Center, Minn.; State University of Iowa College of Medicine, Iowa City, 1908; for many years served as health officer; on the staff of the St. Peter (Minn.) Community Hospital; aged 62; died recently of coronary thrombosis.

Joseph U. Vaillancourt, Quebec, Que., Canada; Laval University Faculty of Medicine, Quebec, 1906; professor of otorhinolaryngology at his alma mater; member of the Royal College of Physicians and Surgeons of Canada; aged 60; died suddenly recently.

William Almon Wood ● Oakland, Calif.; University of Southern California College of Medicine, Los Angeles, 1906; on the staffs of the Children's, Peralta, Providence and the Alameda County hospitals; aged 66; died, July 21, of coronary occlusion.

William Gillespie Dana, Milwaukee; Wisconsin College of Physicians and Surgeons, Milwaukee, 1908; served in the medical corps of the U. S. Army during World War I; aged 68; died, August 1, of arteriosclerosis and diabetes mellitus.

James Thomas McGoveron, Rochester, N. Y.; Baltimore Medical College, 1898; for more than forty years associated with the city department of health; on the staff of St. Mary's Hospital; aged 70; died, August 16, of coronary occlusion.

Edgar Ellsworth Kilby, Mackinaw, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1896; formerly a member of the high school board; aged 71; died, August 17, in St. Francis Hospital, Peoria, of cerebral hemorrhage.

David Jackson Hawk, Tower City, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1912; member of the Medical Society of the State of Pennsylvania; aged 55; died, August 15, of coronary thrombosis.

Coley C. Bowden, Troy, Ala.; Memphis (Tenn.) Hospital Medical College, 1913; member of the Medical Association of the State of Alabama; aged 56; died, August 15, in the Edge Hospital of carcinoma of the stomach.

Douglas Thomas Ormond ● Waconia, Minn.; St. Louis University School of Medicine, 1927; on the staff of St. Mary's Hospital, Minneapolis; aged 39; died, August 13, in the Abbott Hospital, Minneapolis, of septicemia.

Charles L. Dillon, Boone Mill, Va.; University College of Medicine, Richmond, 1899; aged 73; died, July 22, in the Lewis-Gale Hospital, Roanoke, of coronary thrombosis and bilateral bronchopneumonia.

John Wesley Sutton, Petersburg, Tenn.; University of Tennessee Medical Department, Nashville, 1892; member of the Tennessee State Medical Association; aged 80; died, July 16, of cerebral hemorrhage.

Charles Galitzan Marsters, Bass River, N. S., Canada; Dalhousie University Faculty of Medicine, Halifax, 1920; served overseas with the Canadian Forces during World War I; aged 50; died recently.

Frank Paine Witter, Tacoma, Wash.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1887; at one time mayor of Rockford; aged 81; died recently of chronic myocarditis.

John William Darlington, Valley Falls, Kan.; College of Physicians and Surgeons, Baltimore, 1887; member of the Kansas Medical Society; aged 88; died, August 21, of carcinoma of the rectum.

John Adam Steurer ● Mount Vernon, N. Y.; Bellevue Hospital Medical College, New York, 1873; aged 90; died, August 5, of rupture of an abdominal aneurysm and arteriosclerosis.

Ernest John Pieper Jr., Philadelphia; Harvard Medical School, Boston, 1941; aged 25; intern at the Philadelphia General Hospital, where he died, August 3, of a streptococcic infection.

Arthur J. Kleiser, Waveland, Ind.; College of Physicians and Surgeons, Baltimore, 1885; president of the library board for many years; aged 80; died, August 20, of cerebral hemorrhage.

Robert Rutledge Davisson, Winterset, Iowa; Rush Medical College, Chicago, 1890; member of the Iowa State Medical Society; aged 76; died, July 28, of carcinoma of the rectum.

Barnett Herman Cooper, Glen Lyon, Pa.; College of Physicians and Surgeons, Baltimore, 1911; served during World War I; aged 54; died, August 8, of rheumatic heart disease.

Frank E. White, Schenectady, N. Y.; Albany Medical College, 1904; member of the Medical Society of the State of New York; aged 62; died, July 22, of cerebral thrombosis.

Uriah Alexander Cooke, Sylvania, Ohio; Toledo Medical College, 1897; bank president; aged 72; died, August 8, in St. Vincent's Hospital, Toledo, of coronary occlusion.

Ralph Frederick Bacon, New Rochelle, N. Y.; Milwaukee Medical College, 1902; aged 66; died, August 29, in the New Rochelle (N. Y.) Hospital of coronary thrombosis.

R. Ora Hoffman, San Diego, Calif.; Eclectic Medical Institute, Cincinnati, 1891; member of the California Medical Association; aged 74; died, August 16, of heart disease.

Vilas George Van Ornam ● Syracuse, N. Y.; George Washington University School of Medicine, Washington, D. C., 1914; aged 52; died, July 4, of coronary occlusion.

Howard Charles Crum ● Santa Cruz, Calif.; Chicago College of Medicine and Surgery, 1910; aged 58; died, July 29, of coronary occlusion and diabetes mellitus.

Thomas Hugh Balfe, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1923; aged 42; died of heart disease, August 16, while in swimming.

Lewis Clinton Littlejohn, Oconee, Ill.; Medical College of Ohio, Cincinnati, 1885; aged 86; died, August 27, in De Kalb of chronic myocarditis and prostatism.

Orrin Aquilla Hess, Portland, Ore.; Ohio Medical University, Columbus, 1906; for many years county physician; aged 66; died, August 11, of heart disease.

Samuel Kahn, New York; Columbia University College of Physicians and Surgeons, New York, 1900; aged 63; died, July 13, of coronary thrombosis.

Walter Stanley Bardwell, Newport, Wash.; Northwestern University Medical School, Chicago, 1907; aged 63; died, July 4, of cerebral hemorrhage.

Carl Felix Aussendorf ● Milwaukee; Universität Leipzig Medizinische Fakultät, Saxony, Germany, 1910; aged 56; died, July 30, of coronary sclerosis.

William Morse Eames, Northampton, Mass.; Dartmouth Medical School, Hanover, N. H., 1897; aged 78; died, July 23, of valvular heart disease.

Otto George Smersh, Omaha; University of Nebraska College of Medicine, Omaha, 1903; aged 62; died, July 8, of carcinoma of the prostate.

John Crede Miller ● Anderson, Ind.; Indiana University School of Medicine, Indianapolis, 1930; aged 38; died, July 24, of coronary occlusion.

Florence L. Barnes, Hinsdale, Ill.; Hering Medical College, Chicago, 1903; aged 83; died, July 27, in Minneapolis of coronary thrombosis.

Adam Isaiah Berninger, Bradenton, Fla.; Physo-Medical College of Indiana, Indianapolis, 1895; aged 76; died, July 22, of acute myocarditis.

John Quincy Adams West, Knoxville, Tenn.; Tennessee Medical College, Knoxville, 1896; aged 72; died, July 2, of chronic pancreatitis.

Karl Heinrich A. Hilger, Milwaukee; Milwaukee Medical College, 1904; aged 80; died, July 24, of cerebral hemorrhage and arteriosclerosis.

Julian Davis Miller, Mount Vernon, Ky.; University of Tennessee College of Medicine, Memphis, 1928; aged 40; died, July 23, of uremia.

Joseph Henry Desmarais, Bristol, Conn.; Victoria University Medical Department, Coburg, Ont., Canada, 1889; aged 77; died, June 15.

John William Gorman, Brockton, Mass.; College of Physicians and Surgeons, Boston, 1900; aged 64; died, July 28, of bronchopneumonia.

Charles S. Woodruff, Baltimore; University of Maryland School of Medicine, Baltimore, 1891; aged 73; died recently of chronic nephritis.

William E. Oliver, Cairo, Ga.; University of Georgia Medical Department, Augusta, 1902; aged 61; died recently of heart disease.

Oliver C. Davis, Joliet, Ill.; Chicago Homeopathic Medical College, 1882; aged 85; died, August 22, in the Silver Cross Hospital.

Charles Lyman K. Hawley, Danville, Ill.; Chicago Homeopathic Medical College, 1884; aged 80; died, August 2, of heart disease.

Joel M. Hubert, Cleveland, Texas; Memphis (Tenn.) Hospital Medical College, 1904; aged 67; died, June 24, of angina pectoris.

Albert S. J. Ragsdale, Russellville, Ark.; University of Louisville (Ky.) Medical Department, 1890; aged 74; died, July 14.

Ethan Leo Connolly, Collingwood, Ont., Canada; University of Toronto Faculty of Medicine, 1900; aged 66; died, recently.

Andrew Joe Lassiter, Adairville, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1883; aged 84; died recently.

John William de Courcy King, Peterborough, Ont., Canada; Trinity Medical College, Toronto, 1899; aged 68; died, July 10.

Thomas Thompson McRae, Brussels, Ont., Canada; University of Toronto Faculty of Medicine, 1905; aged 60; died, July 13.

Fred George Morrow, Hamilton, Ont., Canada; Western University Faculty of Medicine, London, 1902; aged 61; died, July 9.

William Charles Carroll, Davenport, Iowa; College of Physicians and Surgeons, Keokuk, 1882; aged 86; died, July 15.

Adolph William Faulbaum, Chicago; Washington University School of Medicine, St. Louis, 1903; aged 68; died, July 12.

Edward Stanhope Smythe, Houston, Texas; Jefferson Medical College of Philadelphia, 1890; aged 74; died, August 15.

Anthony H. Nainka, Gleason, Wis.; Medizinische Fakultät der Universität Wien, Austria, 1888; aged 79; died, July 11.

Cornelius H. Brantley, Bailey, N. C.; College of Physicians and Surgeons, Baltimore, 1887; aged 82; died, July 31.

Robert Bird Wyatt, Fort Smith, Ark.; University Medical College of Kansas City, Mo., 1910; aged 78; died, June 1.

Frank Marion Miller, Plainview, Ark.; Kansas City (Mo.) College of Medicine and Surgery, 1919; aged 62; died recently.

Eddie C. McCall, Savannah, Ga.; University of Georgia Medical Department, Augusta, 1888; aged 79; died, July 21.

James Arthur Shacklett, Ethel, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1898; aged 66; died recently.

James Woolslayer Clark ● Pittsburgh; University of Pittsburgh School of Medicine, 1908; aged 60; died, July 1.

William Arthur Scanlon, Edmonton, Alta., Canada; Trinity Medical College, Toronto, Ont., 1904; aged 60; died, June 27.

Edwin E. Armstrong, Sylvania, Ohio; Toledo Medical College, 1897; aged 70; died, July 26, of coronary occlusion.

Charles Adolph Frank, Albuquerque, N. M.; Missouri Medical College, St. Louis, 1886; aged 84; died, August 16.

Benjamin E. Harrison, Cottageville, W. Va.; Starling Medical College, Columbus, 1878; aged 86; died, June 26.

Frederick Stanly Whitaker, Kinston, N. C.; Maryland Medical College, Baltimore, 1913; aged 59; died, July 24.

William Henry La Ferte, Canton, Ohio; Michigan College of Medicine, Detroit, 1885; aged 81; died, June 16.

David H. Harris, Marion, Ill.; Missouri Medical College, St. Louis, 1897; aged 73; died, July 27, of heart disease.

Francis Marion Payne ● Chicago; Hospital College of Medicine, Louisville, Ky., 1904; aged 75; died, July 27.

Walter E. Hendricks, Martinsville, Ind.; Medical College of Ohio, Cincinnati, 1878; aged 89; died, August 21.

James Henry Winter, Parkville, Mo.; Chicago Homeopathic Medical College, 1896; aged 71; died, July 28.

Gideon Harmer Patton, Philadelphia; Jefferson Medical College of Philadelphia, 1902; aged 70; died, July 26.

Willis W. Hobson, Harrods Creek, Ky.; Hospital College of Medicine, Louisville, 1885; aged 82; died, July 7.

George W. Middleton, Monrovia, Calif.; Medical College of Indiana, Indianapolis, 1902; aged 69; died, July 28.

William C. Deizel, Portland, Maine; Maryland Medical College, Baltimore, 1911; aged 56; died, August 8.

John W. Clark, Bellefonte, Pa.; Medico-Chirurgical College of Philadelphia, 1895; aged 74; died, July 19.

Roland Noah Smith, Augusta, Ark.; Kentucky School of Medicine, Louisville, 1893; aged 76; died, June 8.

Homer D. Williamson, Bethany, Ohio; Starling Medical College, Columbus, 1904; aged 63; died, June 16.

John C. Hathaway, Mechanicsburg, Ohio; Starling Medical College, Columbus, 1898; aged 66; died, July 19.

William R. Blankenship, Seattle; Missouri Medical College, St. Louis, 1883; aged 81; died, July 24.

J. C. Bushyhead, Claremore, Okla.; Missouri Medical College, St. Louis, 1891; aged 72; died, July 11.

Chester Lee Hill, Yale, Okla.; Chattanooga (Tenn.) Medical College, 1900; aged 68; died recently.

Francis Downing ● Norwich, Conn.; Baltimore Medical College, 1908; aged 60; died, August 10.

Arthur J. Phinney, Franklin, Ind.; Pulte Medical College, Cincinnati, 1877; aged 91; died recently.

DIED WHILE IN MILITARY SERVICE

Herman Irving Wortis ● New York; Cornell University Medical College, New York, 1933; lieutenant (junior grade) M. C., U. S. Naval Reserve; specialist certified by the American Board of Psychiatry and Neurology, Inc.; assistant clinical professor of psychiatry at the New York University College of Medicine; member of the American Neurological Association, the American Psychiatric Association and the Association for Research in Nervous and Mental Disease; assistant neurologist at the Neurological Institute and Vanderbilt Clinic; aged 32; was killed in a navy airplane accident near Dahlgren, Va., August 23.

Frederick Joseph Jardon, San Francisco; Creighton University School of Medicine, Omaha, 1939; was commissioned a lieutenant (junior grade) MC-V (S), U. S. Naval Reserve on April 4, 1941; was called to duty at the Naval Training Station, Norfolk, Va., June 9, 1941; since February 24 was stationed at the Norfolk Naval Hospital; at one time clinical assistant of psychiatry at the Woman's Medical College of Pennsylvania, Philadelphia; aged 28; was killed in a navy airplane accident near Dahlgren, Va., August 23.

Bureau of Investigation

STIPULATIONS

Agreements Between Federal Trade Commission and Promoters of Various Cosmetics

The following items are abstracts of stipulations in which promoters of cosmetics have cooperated with the Federal Trade Commission to the extent of agreeing to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

Ahnsol.—Advertising misrepresentations for this product which Colloidal Pharmacals, Inc., New York, stipulated with the Federal Trade Commission in December 1941 to discontinue included the following: that a preparation of this kind helps a blemished skin or is a "first aid" for that condition; that it has any value in treating such blemishes as moles, warts, freckles, birthmarks or epitheliomas; that the use of this lotion will prevent or overcome skin eruptions due to systemic factors incident to the age of puberty or adolescence; that it would be of any benefit in clearing up or eradicating large skin pores or toning up the skin or have any remedial actions beyond those properly attributable to a colloidal sulfur lotion.

Ar-Jay Liquid Color Rinse.—This is a coal tar hair dye put out by the Ar-Jay Laboratories, Inc., Ontario, Calif. Because the Federal Trade Commission found that the advertising did not reveal the important fact that the product may be dangerous to certain individuals, the Ar-Jay concern signed a stipulation with the Commission in May 1942 to discontinue any advertisements which did not conspicuously state, "Caution: This product contains ingredients which may cause skin irritation on certain individuals and a preliminary test according to accompanying directions should first be made. This product must not be used for dyeing the eyelashes or eyebrows; to do so may cause blindness." The stipulation provided, however, that it would be sufficient for the advertisement simply to warn, "Caution: Use only as directed on the label," if and when the label should bear the first-described caution and the accompanying labeling should give adequate directions for preliminary testing before each application of the dye.

Beauty House Cosmetics.—These are put out by an Albert H. Bach and a Pincus Bach, trading as The Beauty House, New York. In April 1942 these persons signed a stipulation with the Federal Trade Commission in which they agreed to discontinue misrepresentations about the prices and values of their products as compared to competitive ones and also to discontinue referring to their blend of face powder as "Hollywood" or otherwise using geographic or cosmetic names signifying an origin, process or formula which the preparation so designated does not in fact possess.

Cofelt's Never Failing Hair Coloring.—That this nourishes or rejuvenates the hair and restores the original or natural color to the hair were claims which the Cofelt Chemical Company, Inc., New York, agreed to eliminate from their advertising, in a stipulation which they signed with the Federal Trade Commission in June 1942. Further, they agreed to discontinue any advertisements which failed to reveal that the product contains a metallic salt and should be used with care, and only when the scalp is free from abrasions, sores, cuts or infections. The stipulation permitted, however, that when this warning is given on the label, it will be sufficient for the advertisements to state, "Caution, use only as directed." Tests made by the American Medical Association's chemists in 1929, when the product was known as "Cofelt's Hair Coloring," indicated that it then contained lead compounds and sulfur.

Conti Complexion Cream.—This is sold by Conti Products Corporation, Brooklyn, which in February 1942 stipulated with the Federal Trade Commission that it would discontinue the following misrepresentations: that the cream is effective in preventing or correcting skin dryness, in helping maintain the proper moisture balance of the skin or in conditioning facial muscles, or that it will have a beneficial effect on so-called "worry lines." Also to be discontinued was the use of the word "tissue" in describing the preparation and representing that it builds up, nourishes or otherwise beneficially affects the tissue of the skin.

Hillshire Down Cosmetics.—Under this designation one Marion E. Baldwin, trading as Hillshire Down, Killingly, Conn., puts out a "Goat Milk Hand and Arm Cream," a "Goat Milk Massage and Cleansing Cream" and a "Lotion." In January 1942 this person signed a stipulation with the Federal Trade Commission, agreeing to discontinue the following advertising misrepresentations: that these cosmetics will enable the body to breathe through the skin, have any effect in purifying the blood or reach deeply into the pores and bring out impurities; that any of them is a tonic for the skin or nerves or will tighten the facial muscles, feed the skin, nourish the skin tissue, help produce a healthy skin, be nonallergic to all persons or produce complete, clear or new skin tissue. Further, the promoter agreed to withdraw the claim that the nutritional value of 3 quarts of goat's milk is equivalent to that of 8 quarts of ordinary milk, and to cease employing the word "tissue" or its abbreviation as part of a brand name designating any of these products, or in any manner representing that any of them will affect the skin otherwise than by cleansing the surface of the outer skin tissues. According to the stipulation Marion E. Baldwin formerly sold the cosmetic designated "Hillshire Down Goat Milk Tissue and Foundation Cream," which is now put out as "Hillshire Down Goat Milk Night and Foundation Cream."

Honey Facial Bath.—The Federal Trade Commission found certain misrepresentations in the advertising of this product, such as that it will cure or banish oiliness of the skin, enlarged pores, wrinkles, surface pimples or blackheads; that it is an astringent or will tone or bleach the skin, that superficial application of this product furnishes the skin with vitamins and that because of its honey content it possesses therapeutic value in excess of its action as a detergent or emollient. In May 1942 Elizabeth Redden of New York who puts out this preparation stipulated with the Federal Trade Commission that she would discontinue the foregoing misrepresentations.

Jordeau Waterless Shampoo.—That this was actually waterless as the name implied, was a competent treatment for dandruff and a preventive of colds or would actually eliminate dandruff were misrepresentations which Jean Jordeau, Inc., South Orange, N. J., agreed to discontinue in the advertising, according to a stipulation that this concern signed with the Federal Trade Commission in May 1942.

Lanzette.—This is a pumice stone device for removing superfluous hair and is marketed by an Edward A. Hochbaum, trading as Lanzette, Annette Lanzette and Lanzette Laboratories, Chicago. In a stipulation that Hochbaum signed with the Federal Trade Commission in January 1942 he agreed to cease representing through use of the words "rid," "gone," "disappeared," "overcome" or similar expressions that the product will stop the growth of superfluous hair or that use of the device will have a beneficial effect on the skin or its appearance in excess of a transient glow or ruddiness.

Madame Hector's Pomade.—This is put out by one Etta Hector, trading as Madame Hector Products Company, Brooklyn. In June 1942 she stipulated with the Federal Trade Commission that she would cease representing that her cosmetic product will increase the growth of hair, prevent loss of hair or correct the cause of falling hair. According to the stipulation, her product will not accomplish those results.

Mahdeen.—That this is a competent treatment or an effective remedy for itching scalp or falling hair, that millions of users have found it to produce perfect scalp health and revitalize hair health, or that it can eradicate dandruff or accomplish more than removal of the exfoliated scales of dandruff, or is a remedy for eczematic scalp trouble or any similar affliction, were advertising misrepresentations which the Mahdeen Company, Nacogdoches, Texas, agreed to eliminate from the advertising, in a stipulation which they signed with the Federal Trade Commission in June 1942.

Pompeian Milk Massage Cream.—In June 1942 the Pompeian Company, Inc., and the Joseph Katz Company, advertising agency, both of Baltimore, stipulated with the Federal Trade Commission that they would discontinue these misrepresentations in the advertising: that the cream in question will remove dirt to a greater extent than ordinary cleansing methods or do more than remove "pore deep" dirt; that when used for blackheads or whiteheads it will do more than facilitate the mechanical removal of such blemishes; that the use of this cream will leave the face looking years younger or that it contains pure milk or is capable of nourishing the skin. This stipulation supersedes one which the Commission accepted from the Pompeian concern in February 1941, and the terms of which were noted in this department of THE JOURNAL, Nov. 8, 1941, page 1643.

Superglo Henna Rinse and Lux Hair Dye (or Lux Hair Coloring).—In July 1942 Samuel Abrams, trading as Luxe Manufacturing Company, Brooklyn, signed a stipulation regarding these products with the Federal Trade Commission. According to this, he will no longer represent that "Superglo Henna Rinse" is not a dye or that it imparts a natural shade to the hair. He further stipulated that in the sale of "Lux Hair Dye" also known as "Lux Hair Coloring," he would discontinue any advertisements which did not contain the following warning: "Caution: This product contains ingredients which may cause skin irritation to certain individuals and a preliminary test according to accompanying directions should first be made. This product must not be used for dyeing the eyelashes or eyebrows; to do so may cause blindness." The stipulation permitted, however, that the warning in the advertising might be limited to the statement, "Caution: Use only as directed on label," if and when the label bears the first-described warning conspicuously displayed and the accompanying literature contains adequate directions for such preliminary testing before each application.

Tuch-Up.—Nu-Tone Products Corporation, New York, which puts out hair dye preparations under this name, stipulated with the Federal Trade Commission in August 1941 that it would discontinue the following misrepresentations: that these products will cause the hair to look natural or have a soft texture or that they will have any beneficial effect on such texture; that their use will banish gray hair or cause one to remain young; that they are vegetable compounds and will cover hair roots or have any effect on the color of hair roots; that hundreds of thousands or any other number of women have specified their requirements for a hair dye or that the "Tuch-Up" dyes are new or made of ingredients of recent origin or development. The Nu-Tone concern further agreed to cease representing that it manufactures or controls the manufacture of the dyes that it sells, unless and until such is the fact.

Correspondence

"TOTAL COLLAPSE ASSOCIATED WITH PHYSICAL EXERTION"

To the Editor:—In the August 22 issue of THE JOURNAL, on page 1431, is an editorial comment entitled "Total Collapse Associated with Physical Exertion." I must take issue with the authors quoted who conclude that severe physical exertion or trauma can produce coronary occlusion.

Reviewing the recent report of Jokl and Suszman (Mechanisms Involved in Acute Fatal Nontraumatic Collapse Associated with Physical Exertion, *Am. Heart J.* **22**:761 [June] 1942) you write that these authors, analyzing 66 cases of sudden death in which clinical data and complete necropsy reports were available, came to the not unexpected conclusion that collapse following exertion is almost invariably due to circulatory disease of long standing. You say that the authors found that acute coronary occlusion was the second in order of frequency of the "circulatory disease of long duration" found at necropsy. Actually, however, in this particular article no "clinical data and complete necropsy reports" are available. Autopsy reports are not cited but rather are promised in a future publication in press. Yet the authors do not hesitate to write in their summary that "the pathologic findings are given and interpreted." You have used the expression of the authors and unintentionally given the impression that these were available.

Under the caption "Chest Injury and Coronary Occlusion" two other authors are quoted. The first (Sigler, L. H.: Trauma of the Heart Due to Nonpenetrating Chest Injuries, THE JOURNAL, July 11, 1942, p. 855) presents presumably 5 such cases, but only in the fourth does he state that the "infarction was undoubtedly due to coronary artery thrombosis which was precipitated by the injury." The story is that of a man aged 52 who tripped and fell unconscious and "an electrocardiogram taken later showed myocardial infarction." The legend below the electrocardiogram reads "About four weeks after accident." I cannot understand why a definite time is not stated, rather than "later" or "about four weeks." Surely the author knew the details. Why did he not present an electrocardiogram taken as soon as possible after the accident? With the paucity of data presented it is just as reasonable to assume that the man experienced a coronary occlusion first and that his fall resulted from it.

The last author quoted (Leinoff, H. D.: Acute Coronary Thrombosis in Industry, *Arch. Int. Med.* **70**:33 [July] 1942) admits in his second paragraph that he should not have used the expression "acute coronary thrombosis," for he writes "The diagnosis, most often, was acute coronary thrombosis with myocardial infarction, but a better diagnostic term would have been acute traumatic heart disease with myocardial and pericardial damage." In his conclusions too he states "The clinical picture is that of an acute pathologic condition of the heart and closely resembles that of coronary occlusion, from which it is differentiated by the history." Then why mislead his readers? He too gives no evidence that trauma causes coronary thrombosis. In case 6 he states "The electrocardiographic diagnosis was auricular fibrillation, with a controlled ventricular rate, changes suggestive of myocardial damage and residual signs of anterior coronary occlusion. . . ." Yet in the next paragraph, dealing with the postmortem examination, the last three sentences are "The ostiums of the coronary arteries are patent. The coronary vessels are sclerotic and the lumens narrowed. There is no evidence of occlusion, however." Of the 18 cases reported this was the only 1 with a postmortem examination, and this case, on the author's own autopsy protocol, was not coronary occlusion or thrombosis.

I realize fully that severe exertion and trauma, direct or indirect, to the chest or abdomen can produce nonfatal and fatal injury to the heart and large blood vessels in the chest. I fully agree on this with Jokl and Suszman, Sigler and Leinoff, but I maintain that coronary occlusion does not result from these causes.

In the foreign literature the same few cases are repeatedly cited uncritically to show relationship between trauma and coronary occlusion. This is not the place to go into the matter in detail, but we have frequently presented data on the precipitating factors associated with coronary occlusion. My colleagues and I have definitely concluded that neither severe exertion nor trauma produces coronary occlusion (Master, A. M.; Dack, Simon, and Jaffe, H. L.: Factors and Events Associated with Onset of Coronary Artery Thrombosis, THE JOURNAL, Aug. 21, 1937, p. 546; Activities Associated with the Onset of Acute Coronary Artery Occlusion, *Am. Heart J.* **18**:434 [Oct.] 1939. Master, A. M.: Angina Pectoris and Cardiac Infarction from Trauma, Correspondence, THE JOURNAL, July 29, 1939, p. 440. Master, A. M.; Dack, Simon, and Jaffe, H. L.: The Relation of Effort and Trauma to Acute Coronary Occlusion, *Indust. Med.* **9**:359 [July] 1940; The Role of Effort, Trauma, Work and Occupation in the Onset and Subsequent Course of Coronary Artery Occlusion, *M. Ann. District Columbia* **10**:79 [March] 1941. Master, A. M.: Effort, Trauma, Occupation and Compensation in Heart Disease, *Bull. New York Acad. Med.* **17**:778 [Oct.] 1941). They can and do cause infarction without occlusion, heart failure and other serious cardiovascular conditions. It will be apparent that the chief reason for the difference of opinion as to whether severe exertion and trauma cause coronary occlusion (coronary thrombosis) or not lies in the fact that terms are used loosely. Leinoff is apparently beginning to appreciate this fact. We have emphasized the necessity of a correct nomenclature of coronary disease (Master, A. M.; Dack, Simon, and Jaffe, H. L.: Nomenclature in Coronary Artery Disease, *Modern Concepts of Cardiovascular Disease* **10**, No. 11 [Nov.] 1941). Severe exertion or trauma often produces myocardial contusion, infarction or necrosis without occlusion, i. e. acute coronary insufficiency, but this must not be confused with myocardial infarction resulting from coronary occlusion. The former, i. e. acute coronary insufficiency, is the result of prolonged ischemia of the heart muscle, resulting in focal, disseminated necrosis of the myocardium, subendocardial in location. The endocardium and pericardium are not involved. The electrocardiogram is characteristic: RS-T depressions and T wave inversions, without Q waves. Coronary occlusion (coronary thrombosis), on the other hand, is a complete closure of a coronary artery, with massive, confluent, through and through infarction as a rule. The endocardial involvement often results in mural thrombosis with embolization, and the pericardial involvement produces pericarditis. The electrocardiogram is characteristic and in the vast majority of instances pathognomonic, consisting of RS-T elevations progressing to deeply inverted T waves, large Q waves and a reciprocal relationship between leads 1 and 3. There are other important clinical distinctions. These have been presented voluminously in the German literature for years and in the American for the past few years, material which my colleagues and I recently partially reviewed (Master, A. M.; Gubner, Richard; Dack, Simon, and Jaffe, H. L.: Differentiation of Acute Coronary Insufficiency with Myocardial Infarction from Coronary Occlusion, *Arch. Int. Med.* **67**:647 [March] 1941).

My purpose in writing is thus twofold: in regard to whether severe exertion or trauma produces coronary occlusion, to show that the authors cited have given no proof for this; and, second, to make a plea that terms be used correctly in the nomenclature of heart disease, particularly with respect to coronary artery disease and myocardial infarction.

ARTHUR M. MASTER, M.D., Bethesda, Md.
Commander, M. C., U. S. N. R.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

CHICAGO, Feb. 15-16, 1943. Sec., Council on Medical Education and Hospitals, Dr. H. G. Weiskotten, 535 North Dearborn Street, Chicago.

NATIONAL BOARD OF MEDICAL EXAMINERS
EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, Sept. 26, page 310.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 15-16. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ARIZONA: * Phoenix, Oct. 6-7. Sect., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: * *Medical.* Little Rock, Nov. 5-6. Sec., Dr. D. L. Owens, Harrison. *Eclectic.* Little Rock, Nov. 5. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Written.* Sacramento, Oct. 19-22. *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, Dec. 16. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

CONNECTICUT: * *Medical. Written.* Hartford, Nov. 10-11. *Endorsement.* Hartford, Nov. 24. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic.* Derby, Nov. 10-11. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Dover, July 13-15. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: * Washington, Nov. 9-10. Sec., Commission on Licensure, Dr. George C. Ruhland, 6150 East Municipal Bldg., Washington.

FLORIDA: * Jacksonville, Nov. 23-24. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 13-14. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Jan. 12. Dir., Bureau of Occupational Licenses, Mr. Walter Curtis, 353 State Capitol Bldg., Boise.

ILLINOIS: Chicago, Oct. 13-15. Superintendent of Registration, Mr. Philip M. Harman, Department of Registration and Education, Springfield.

INDIANA: Indianapolis, Jan. 13-15. Sec., Board of Medical Registration and Examination, Dr. W. C. Moore, 301 State House, Indianapolis.

KENTUCKY: Louisville, March 2-4. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Portland, Nov. 3-4. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Medical.* Baltimore, Dec. 8-11. Sec., Dr. John T. O'Mara, 1213 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 8-9. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 17-20. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413-F State House, Boston.

MICHIGAN: * Lansing, Oct. 14-16. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 203 Hollister Bldg., Lansing.

MINNESOTA: * Minneapolis, Oct. 20-22. Sec., Dr. Julian F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, Oct. 6. Sec., Dr. Otto G. Klein, First National Bank Bldg., Helena.

NEVADA: Carson City, Nov. 2-4. Sec., Dr. Frederick M. Anderson, 215 N. Carson St., Carson City.

NEW JERSEY: Trenton, Oct. 20-21. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, Oct. 13-14. Sec., Dr. LeGrand Ward, 135 Sena Plaza, Santa Fe.

NORTH CAROLINA: December. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 5-8. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: *Endorsement.* Oct. 6. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: * Oklahoma City, Dec. 9. Sec., Dr. J. D. Osborn, Jr., Frederick.

PENNSYLVANIA: Philadelphia, January. Act. Sec., Bureau of Professional Licensing, Mrs. Marguerite G. Steiner, Department of Public Instruction, 358 Education Bldg., Harrisburg.

TEXAS: Austin, Dec. 28-30. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas.

UTAH: Salt Lake City, June. Dir., Department of Registration, Mr. G. V. Billings, 324 State Capitol Bldg., Salt Lake City.

VERMONT: Burlington, April 1-3. Sec., Dr. F. J. Lawliss, Richford.

VIRGINIA: Richmond, Dec. 8-11. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.

WEST VIRGINIA: Charleston, Oct. 26-28. Commissioner, Public Health Council, Dr. C. F. McClintic, State Capitol, Charleston.

WYOMING: Cheyenne, Oct. 5-6. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

CONNECTICUT: Oct. 10. Address State Board of Healing Arts, 1945 Yale Station, New Haven.

DISTRICT OF COLUMBIA: Washington, Oct. 19-20. Sec., Commission on Licensure, Dr. George C. Ruhland, 6150 East Municipal Bldg., Washington.

FLORIDA: Gainesville, Oct. 31. Application must be on file not later than Oct. 16. Sec., Dr. J. F. Conn, John B. Stetson University, DeLand.

IOWA: Des Moines, Oct. 14. Dir., Division of Licensure & Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MINNESOTA: Minneapolis, Oct. 6-7. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: Lincoln, Oct. 6-7. Dir., Bureau of Examining Boards, Mrs. Jeannette Crawford, 1009 State Capitol Bldg., Lincoln.

NEW MEXICO: Albuquerque, Feb. 1. Sec., Miss Pia Joerger, State Capitol, Santa Fe.

OKLAHOMA: Oklahoma City, May. Sect., Dr. Oscar C. Newman, Shattuck.

OREGON: Portland, Oct. 31. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Nov. 18. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Sioux Falls, Dec. 4-5. Sec., Dr. G. M. Evans, Yankton.

Alabama June Report

The Alabama State Board of Medical Examiners reports the written examination for medical licensure held at Montgomery, June 16-18, 1942. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Thirty-four candidates were examined, all of whom passed. The following schools were represented:

School	PASSED Year Grad.	Number Passed
Howard University College of Medicine	(1942)*	1
Emory University School of Medicine	(1941)	1
Rush Medical College	(1942, 2)*	2
University of Louisville School of Medicine	(1942, 2)*	2
Tulane University of Louisiana School of Medicine	(1941), (1942, 10)*	11
Johns Hopkins University School of Medicine	(1942)*	1
Harvard Medical School	(1941), (1942, 2)*	3
Washington University School of Medicine	(1942)*	1
Long Island College of Medicine	(1938, 5)*	5
Duke University School of Medicine	(1938)	1
Jefferson Medical College of Philadelphia	(1942)*	1
University of Pennsylvania School of Medicine	(1942, 4)*	4
Vanderbilt University School of Medicine	(1942)*	1

Twenty-two physicians were licensed to practice medicine by reciprocity and 2 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners from May 23 through July 30. The following schools were represented:

School	LICENSED BY RECIPROCITY Year Grad.	Reciprocity with
University of Arkansas School of Medicine	(1938)	Arkansas
Emory University School of Medicine	(1938), (1940, 2) (1938) Louisiana	Georgia,
Northwestern University Medical School	(1939)	Illinois
University of Illinois College of Medicine	(1939)	Illinois
University of Louisville School of Medicine	(1927)	Kentucky
Tulane University of Louisiana School of Medicine	(1922) (1938) Louisiana	Tennessee,
University of Nebraska College of Medicine	(1940)	Missouri
Western Reserve University Medical Department	(1911)	Ohio
Hahnemann Medical Col. and Hosp. of Philadelphia	(1938)	Maine
University of Pennsylvania School of Medicine	(1920) (1934) Pennsylvania	New York,
Meharry Medical College	(1940), (1941)	Tennessee
University of Nashville Medical Department	(1910)	Tennessee
University of Tennessee College of Medicine	(1940)	Tennessee
Vanderbilt University School of Medicine	(1940)	Tennessee
Medical College of Virginia	(1940)	Virginia
University of Virginia Department of Medicine	(1928)	Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.
Duke University School of Medicine		(1936)
University of Pennsylvania School of Medicine		(1934)

* Licenses have not been issued.

Colorado June Report

The Colorado State Board of Medical Examiners reports the written examination for medical licensure held at Denver, June 9-11, 1942. The examination covered 8 subjects and included 58 questions. An average of 75 per cent was required to pass. Fifty-three candidates were examined, all of whom passed. Three physicians were licensed to practice medicine by endorsement. The following schools were represented:

School	PASSED Year Grad.	Number Passed
College of Medical Evangelists	(1942, 3)	3
University of Colorado School of Medicine	(1941, 2), (1942, 43)	45
Northwestern University Medical School	(1942, 2)	2
Rush Medical College	(1941)	1
Cornell University Medical College	(1941)	1
Hahnemann Medical College and Hospital of Philadelphia	(1939)	1

School	LICENSED BY ENDORSEMENT Year Grad.	Endersement of
Indiana University School of Medicine	(1939)	Indiana
Washington University School of Medicine	(1941) (1934) N. B. M. Ex.	Missouri,

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Jurisdiction of Industrial Commission; Release Given Employer by Injured Employee.—On June 18, 1938, during the course of his employment as a welder, the plaintiff injured the little finger of his left hand, the injury consisting of a deep laceration nearly encircling the finger and exposing the tendons and a fracture of the proximal phalanx in four different places. He was immediately sent by his employer, at the request of its insurance carrier, to the office of the defendant physicians for treatment. One of the defendants treated the plaintiff for shock, rendered first aid, took four sutures in the laceration and bandaged the finger. About two weeks later a roentgenogram, taken for the first time, disclosed that the finger was fractured and that the comminuted fragments of bone were not completely in place, there having been some degree of telescoping or fixation of one fragment into the other. The defendants continued to treat the patient until July 11 but made no attempt to reduce the fracture, merely cleansing and bandaging the laceration from time to time. The fracture subsequently healed with a reasonably good alinement, and the plaintiff returned to work, although he had permanently lost the power of extension of the finger. Contending in effect that the condition of his finger was the result of the defendants' failure to use the roentgen ray and to apply a splint to the fractured finger, the plaintiff filed suit against the physicians for malpractice. From a judgment of the trial court, sitting without a jury, in favor of the plaintiff, the defendants appealed to the district court of appeal, second district, division 2, California.

It was the duty of the defendants, said the court of appeal, to apply to the treatment of the plaintiff's finger that degree of care, skill, knowledge and attention ordinarily possessed and exercised by practitioners of the medical profession under similar circumstances in the locality in which the treatment was administered. Medical experts testified that in failing to take a roentgenogram of the plaintiff's finger when he first appeared for treatment the defendants did not employ the required degree of care and skill. Furthermore, one of the defendants admitted that the use of the roentgen ray is endorsed in discovering fractures of small bones such as the fracture of the plaintiff's little finger. It was also established by expert testimony that one who possessed the degree of care and skill ordinarily used by physicians and surgeons in good standing practicing in that locality would have employed extension to the plaintiff's finger by the use of splints in order to reduce the fracture and that the ordinary standard of care of physicians and surgeons practicing in the locality in question required that a splint be applied to a laceration of the type received by the plaintiff in order to protect the tendons and prevent any stress or strain on them. On the basis of all the evidence, the court of appeal concluded that the record contained sufficient evidence to support the finding by the trial court that the defendants were negligent in failing to discover and reduce the fracture and, in addition, that they were negligent in failing to apply a splint to the plaintiff's finger in order to protect the tendons.

In December 1938 the plaintiff, for a valuable consideration, executed a complete release to his employer for any and all claims which existed at that time, especially with reference to this particular injury, which release was approved by the industrial accident commission. The defendants contended, in effect, that since the plaintiff's original injury was compensable under the workmen's compensation act therefore the industrial accident commission had exclusive jurisdiction over the injury, and a release to the employer was a bar to the present action against the physicians who acted on behalf of the employer and its insurance carrier. The court of appeal said that if, as contended by the defendants, the industrial accident commission had exclusive jurisdiction over claims for the recovery of damages for malpractice of a physician in the treatment of an industrial injury, it might properly be held that the release was a bar. Such, however, is not the law. In cases in which recovery is sought by an employee against his employer or the employer's insurance carrier for a new or aggravated injury resulting from the negligence of a physician in treating an industrial injury, the industrial accident commission has exclusive jurisdiction to determine the claim. But when, as in the instant case, recovery is sought against the physicians only, for the new or aggravated injury which resulted from the negligence of the physicians who treated the plaintiff's industrial injury, and neither the employer nor the latter's insurance carrier is a party, the plaintiff may recover in an ordinary civil action for malpractice. The court therefore concluded that the release was effective only as to the plaintiff's employer and the insurance carrier and did not bar his action against the defendants for the separate and subsequent injury which was caused by their malpractice. The judgment in favor of the plaintiff was therefore affirmed.—*Smith v. Coleman, 116 P. (2d) 133 (Calif., 1941).*

Pharmacists: Liability for Selling Poison to Intoxicated Person.—Mrs. Mosely sued the Bennett Drug Stores, Inc., for damages for negligence. She alleged that, while her husband was so intoxicated on a stated night that it was obvious to any person of ordinary intelligence that he was not in possession of his faculties, he purchased from the defendant some carbolic acid and immediately drank it, dying within a few minutes. The defendant, she alleged, owed her husband a duty not to place a dangerous drug or poison into his hands while he was so obviously in a state of intoxication that he could not understand and comprehend the dangers of the poison and the defendant was negligent in selling the goods to him when he was so intoxicated, she further alleged. The defendant interposed general and special demurrers, which the trial court overruled, and the defendant then brought exceptions to the court of appeals of Georgia, division No. 2.

The defendant denied liability, contending that the proximate cause of the death of the plaintiff's husband was his voluntary drunkenness, not its sale of the poison to him, citing *Meyer* v. *King*, 72 Miss. 1, 16 So. 245 and *King* v. *Henkie*, 80 Ala. 505, 60 Am. Rep. 119, both of which cases held that the proximate causes of the deaths in the cases involved were the voluntary drunkenness of the deceased persons and not the sale of a poison to them. It is the general rule, said the court of appeals, that the duty which one owes to avoid the consequence of another's negligence is that degree of ordinary care which would be exercised by a sober person. There are exceptions to the rule, however, and we think that the exception applies in this case. It is clear to us that a person who is too drunk to understand the dangerous nature of carbolic acid is one of the class designed to be protected by the provision in the pharmacy practice act which prohibits the sale of certain poisons, listed among which is carbolic acid, unless, among other things, on due inquiry it is found that the person to whom the poison shall be delivered is aware of its poisonous character and represents that it is to be used for a legitimate purpose. (Mississippi Code, section 42-701.) The exception to the rule we have mentioned is based on the doctrine of last clear chance, or humanitarian doctrine, and is predicated on the theory that there is a duty owed to one who has been so negligent as to render himself incapable of exercising ordinary care to protect himself, after such incapacity is known. This doctrine has been applied in numerous cases in which a drunken or a disabled person was in a place of danger and in which his helplessness or facts indicating helplessness were known to another. When this situation exists it is such other person's duty to exercise ordinary care to avoid injuring the unfortunate person even though if it had not been for the previous negligence, such as voluntary drunkenness, he could have put himself in a place of safety by the exercise of ordinary care. In brief, said the court, a person is charged with knowledge that a man staggering drunk is incapable of exercising ordinary care for his own safety, and he is bound to deal with him with that fact in mind.

The fallacy of the Mississippi and Alabama cases cited by the defendant as relieving it from liability lies in the fact that those cases absolved the defendants by projecting the voluntary drunkenness of the decedents above and beyond the negligence of the defendants, when as a matter of fact that negligence was at an end at the time of the defendants' negligence, and this negligence of the decedents charged the defendants with knowledge that their acts might reasonably result in injury to the decedents or others. Of course, no person is chargeable with unforeseeable consequences. However, it seems to us, said the court, that the conduct of a man who is staggering drunk is so unpredictable that one selling poison to him would be liable for whatever injury resulted. The defendant assumes that the decedent drank the poison with the intent to commit suicide. Even if this would relieve the defendant it does not appear from the petition filed by the plaintiff that the decedent drank the poison knowing that it was poison and with the intention of taking his life.

In the opinion of the court, the petition filed by the plaintiff set forth a cause of action and the action of the trial court overruling the demurrers was proper. The judgment of the trial court was accordingly affirmed.—*Bennett Drug Stores, Inc., v. Mosely, 20 S. E. (2d) 208 (Ga., 1942).*

Dental Practice Acts: Sale of Dentures by Dental Laboratories.—In 2 cases the Supreme Courts of Illinois and Indiana passed on the right of persons operating dental laboratories for the making of dentures to engage in such business without being licensed to practice dentistry. The decision in each case depended on the particular statutory wording of the dental practice act in the respective state.

In Illinois the dental practice act provides, in effect, that such persons have to possess a license to practice dentistry unless the impression from which the plate was made was taken by a licensed dentist, the placing and adjusting of the plates in the oral cavity was performed by a licensed dentist and the person operating the laboratory made no offer to sell the plates or the services rendered in their construction to the general public. The evidence showed that the latter condition was breached by the plaintiffs in that they advertised their business by offering to sell full or partial dentures to the public. The Supreme Court of Illinois upheld the constitutionality of the act and dismissed the plaintiffs' bill to restrain the attorney general and the Department of Registration and Education from prosecuting them criminally.

In Indiana, the dental practice act exempted from the licensing requirement the "performance of mechanical work on inanimate objects by any person employed in or operating a dental laboratory." The evidence showed that the defendant operated a dental laboratory in which artificial teeth were manufactured from impressions made by a licensed dentist, the finished product being sent directly to the customer who paid both the defendant and the dentist. Since the Indiana statute did not forbid a sale directly to the user, the Supreme Court denied the petition of the state board of dental examiners for an injunction to restrain the defendant from the alleged practice of dentistry without a license.—*Lasdon v. Hallihan, Director of Registration and Education, 36 N. E. (2d) 227 (Ill., 1941); State ex rel. Kennedy v. Lepon, 36 N. E. 276 (2d) (Ind., 1941).*

Accident Insurance: Death Following Administration of Spinal Anesthesia.—A life insurance policy, written by the defendant company, provided for the payment of double indemnity in case death occurred "as a direct result of bodily injuries effected through external, violent and accidental means, where there is a visible contusion or wound on the exterior part of the body." While this policy was in force the insured submitted to an operation for the treatment of chronic inflammation of the gallbladder. Prior to the operation a spinal anesthetic was administered. Shortly after its administration, and before the operation was begun, the patient complained of shortness of breath, and his respiration became graduated and shallow. Emergency measures immediately undertaken were in vain, the insured's respiratory system became completely paralyzed or anesthetized and he died. Subsequently his administratrix sued the defendant insurance company to recover under the double indemnity provision of the policy and, from an adverse judgment in the trial court, appealed to the Supreme Court of North Carolina.

The injection of the spinal anesthesia was performed with the instruments, force and dosage customarily used and approved by the medical profession, and the point at which the injection was made in the spinal column was the point ordinarily used for such injections. The Supreme Court first pointed out that the deceased's insurance was not against accidental death; it was against death resulting from accidental means. If the death resulted from the use of ordinary means voluntarily employed in a not unusual or unexpected way, it was not produced by accidental means. The court found that in addition to the usual and expected sedative effect of the anesthetic, there occurred an unexpected result due to the collapse of the respiratory system. If it is conceded, the court pointed out, that there was an accidental death caused by external means—the injection of the anesthetic—the fact still remained that the means was not accidental but was voluntarily authorized and was intentional.

The plaintiff contended, however, that the evidence showed the head of the deceased was accidentally or unintentionally lowered after the anesthetic had begun to affect his respiratory system and that this lowering of the head tended further to increase the risk and caused the death. She contended that this evidence brought her case within the provisions of the policy. The Supreme Court could not agree with this contention and said that even if it was conceded that this evidence tended to show "death by accidental means," no visible contusion or wound on the exterior part of the body was caused thereby, for there was no causal connection between the wound made by the injection and such "death by accidental means." The wound was voluntarily made with the full consent of the patient. The Supreme Court therefore concluded that if the cause of the death was caused by the injection of the anesthetic, only an accidental death from an intentional act performed in the usual and ordinary way, with full consent, was established. The element of accidental means was absent. If on the other hand, it was related to the accidental lowering of the patient's head in the excitement caused by the sudden emergency which arose when his respiratory system became affected, there was no exterior visible wound or contusion caused thereby. Accordingly, the court held that the judgment of the trial court in favor of the defendant was correct and it was therefore affirmed. —*Fletcher v. Security Life & Trust Co., 16 S. E. (2d) 687 (N. C., 1941).*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 11-14. Dr. W. L. Benedict, 102 Second Ave., S.W., Rochester, Minn., Acting Secretary.

American Academy of Pediatrics, Chicago, Nov. 4-7. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Academy of Physical Medicine, Boston, Oct. 14-17. Dr. Herman A. Osgood, 144 Commonwealth Ave., Boston, Secretary.

American College of Surgeons, Cleveland, November 17-20. Dr. Frederic A. Besley, 40 East Erie Street, Chicago, Secretary.

American Hospital Association, St. Louis, Oct. 12-16. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Secretary.

American Public Health Association, St. Louis, Oct. 27-30. Dr. Reginald M. Atwater, 1790 Broadway, New York, Executive Secretary.

Association of Military Surgeons of the United States, San Antonio, Texas, Nov. 5-7. Colonel James M. Phalen, Army Medical Museum, Washington, D. C., Secretary.

Delaware, Medical Society of, Dover, Oct. 13-14. Dr. W. O. La Motte, Medical Arts Bldg., Wilmington, Secretary.

Inter-State Postgraduate Medical Association of North America, Chicago, October 26-30. Dr. Arthur G. Sullivan, 16 North Carroll Street, Madison, Wisconsin, Secretary.

New York State Association of Public Health Laboratories, Albany, Nov. 6. Miss Mary B. Kirkbride, New Scotland Ave., Albany, Secretary.

Omaha Mid-West Clinical Society, Omaha, Oct. 26-30. Dr. J. D. McCarthy, 1036 Medical Arts Bldg., Omaha, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Oct. 5-8. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.

Southern Medical Association, Richmond, Va., November 10-12. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Virginia, Medical Society of, Roanoke, Oct. 5-7. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

64:1-210 (July) 1942

*Pertussis Antitoxin. M. Weichsel, Long Island City, N. Y.; N. Katona, Cincinnati, and Flora Liu, Staten Island, N. Y.—p. 1.

Spastic Children in Outpatient Psychologic Clinic. Olga Bridgman, San Francisco.—p. 11.

Standard Values for Basal Oxygen Consumption in Adolescents. N. W. Shock, Baltimore.—p. 19.

*Fibrocystic Disease of Pancreas: Report of Eight Cases. W. A. Daniel Jr., Chicago.—p. 33.

*Studies with Hemophilus Pertussis: VIII. Antigenic Structure of Hemophilus Pertussis and Its Clinical Significance. E. W. Flosdorf and A. C. McGuinness, Philadelphia.—p. 43.

Spontaneous Atlantoaxial Dislocations: Possible Relation to Deformity of Spine. J. H. Hess, S. M. Abelson and I. P. Bronstein, Chicago. —p. 51.

Studies on Blood Phosphorus: I. Intracellular and Extracellular Blood Phosphorus. H. Behrendt, New York.—p. 55.

Serum Sickness and Anaphylaxis: Analysis of Cases of 6,211 Patients Treated with Horse Serum for Various Infections. F. G. Kojis, New York.—p. 93.

Pertussis Antitoxin.—Weichsel and his colleagues examined the serums of patients with whooping cough, normal children and children who had been inoculated with pertussis vaccines for pertussis antitoxin. They determined whether pertussis antigen produced antibodies in the human being. Pertussis antitoxin was rarely present in serum from normal children. Likewise the serum of adults, irrespective of a history of pertussis, and children thought to be immune had little antitoxin. During active whooping cough the serum of a certain percentage of children had a positive titer, but that of many children during convalescence from the disease failed to have any antitoxin. The injection of "detoxified pertussis antigen" raised the titer in a fair percentage of these children and of healthy children treated with large doses. The maximal antitoxin response was obtained from two to eight weeks after the injections were completed. There was little antitoxin in the serum of children who had received large doses of bacterial vaccine. The bacterial vaccine lacked the power to act as a primary stimulus to the subsequent injection of small doses of formaldehyde treated pertussis filtrate.

Fibrocystic Disease of Pancreas.—The general aspects of fibrocystic disease of the pancreas are reviewed by Daniel, who presents 8 cases of the disease. The symptoms are those of malnutrition and of chronic pulmonary disease with frequent large, fatty, foul stools. There is no proved etiology. In many instances it is apparently familial. Vitamin A deficiency has been suggested, and there is much evidence in favor of such a theory. Whether it is congenital is unproved. One of the author's patients had the disease, yet his twin of the same sex was free from similar symptoms. Although each patient presented evidence of pulmonary and pancreatic damage, the respiratory symptoms (coughing) were usually more alarming. At necropsy the pathognomonic changes of the pancreas are seen chiefly in the microscopic sections rather than on gross observation. Microscopically, the exocrine parenchyma is extensively damaged; this is illustrated by fibrosis, distention of the ducts and acini with inspissated secretion, degenerative changes of the cells and acute and chronic inflammatory cell infiltrations. Squamous cell metaplasia is usually prominent in the lungs. Until recently the disease was not diagnosed during life. The three symptoms which should cause the disease to be suspected are failure to gain weight or malnutrition, respiratory distress and large, fatty, homogeneous, foul stools. The prognosis is poor, but recent methods of treatment offer some hope. One of the author's patients is alive at the age of 22 months, thirteen months after onset. Pancreatic products were the chief therapeutic agent. The amount to be given is empiric, but overtreatment is probably better than the reverse. From 0.3 to 5 Gm. of the granules has been given with each feeding until a response was obtained. Large doses of vitamin A should be given. The diet should be low in fat content. With a fatty liver choline is of value.

Hemophilus Pertussis.—In intradermal tests with the purified agglutinogen prepared from phase I organisms Flosdorf and McGuinness observed no primary toxicity in either rabbits or approximately 650 human beings, including normal babies 8 to 14 months of age. In children vaccinated as long as six years ago, in children who had recovered from the disease and in hyperimmunized adult donors an immune response of the immediate type was obtained to intradermal tests. Hemophilus pertussis is of a single serologic type. A related organism, Bacillus parapertussis, has been shown to cause some cases of whooping cough. H. pertussis in the laboratory exists in four variant forms as "phases" which are serologically distinct. Only organisms in phase I are of clinical significance. Two toxins occur in H. pertussis; one is thermolabile and the other is thermostable. These toxins alone apparently are not adequate for establishing immunity by their use as toxoidal immunizing agents unaided by reagents to produce antibacterial immunity. For such a purpose it is essential that organisms used in the preparation of vaccine be in phase I. On the basis of agglutination titer only little cross protection can be expected from the use of standard vaccine. Hyperimmune human serum of known high degree of effectiveness in prevention and treatment has been shown by agglutination to be high in its content of antibacterial antibody. The serum contains no demonstrable antitoxin. Cross protection might be expected, but as yet no such clinical evidence exists. Clinically, purified agglutinogen is giving promise of a useful test reagent for susceptibility to pertussis.

Annals of Internal Medicine, Lancaster, Pa.

17:1-182 (July) 1942

Primary Carcinoma of Lung: Report of 115 Cases, Thirty-Eight Autopsies and Seventy-Seven Bronchoscopic Biopsies. J. A. Perrone and J. P. Levinson, Pittsburgh.—p. 12.

Value of Splenectomy in Felty's Syndrome. C. L. Steinberg, Rochester, N. Y.—p. 26.

*Prostatitis—Cause of Acute or Recurrent Abdominal Pain. H. Freund, Brooklyn.—p. 41.

Eosinophilia in Fatal Asthma: Studies of Bone Marrow and Myocardium. F. H. Chafee, J. R. Ross and E. M. Gunn, Providence, R. I. —p. 45.

Fat Excretion in Bowel of Man. C. J. Nuñez and J. A. Bargen, Rochester, Minn.—p. 60.

Some Notes on Cystic Disease of Lungs: Report of One Case. W. R. Stanford, Durham, N. C., and B. C. Nalle Jr., Charlotte, N. C.—p. 65.

Tularemia with Pulmonary Complications. G. G. Richards, Salt Lake City.—p. 78.

Chronic Ulcerative Colitis: Allergy in Its Etiology. A. H. Rowe, Oakland, Calif.—p. 83.

Intercapillary Glomerulosclerosis. C. L. Mauser, A. H. Rowe and P. P. E. Michael, Oakland, Calif.—p. 101.

Transitory Pulmonary Infiltrations Mistaken for Tuberculosis: Report of Five Cases. A. A. Karan, Liberty, N. Y., and E. Singer, New York.—p. 106.

Prostatitis.—In 6 men whose major complaint was chronically recurrent pain in the lower right quadrant of the abdomen Freund, after a thorough examination, found that prostatitis existed in each. The inflammation was confirmed by the presence of definite pus in the expressed secretions of the gland. No other objective signs were present which could be considered as relevant to the chief complaint. The complaint had been present in all but 1 for from one to ten years. One patient was subjected to a hernioplasty and then to a hemorrhoidectomy, primarily for relief of the abdominal pain, but with no relief. In 3 the diagnosis of chronic appendicitis was considered and in 1 appendectomy was entertained. The etiologic factor of the prostatitis varied, being masturbation in 1, prostatic hypertrophy and infection in 1, a recurrent gonococcic urethritis in 1 and coitus interruptus in the remainder. Pressure over the tender portion of the prostate reproduced exactly the pain complained of by the patients. It is possible that the prostate as an offending agent in

abdominal pain may be occasionally overlooked, making for a better understanding of "Pain is not where you find it." Conservative local therapy directed toward the prostatitis resulted in relief of signs and symptoms in 4.

Annals of Surgery, Philadelphia

116:161-320 (Aug.) 1942

*Intrapericardial Teratoma and Tumor of Heart: Both Removed Operatively. C. S. Beck, Cleveland.—p. 161.
Postoperative Thromboembolization, Platelet Count and Prothrombin Time After Surgical Operations: Simple Method for Detecting Reductions and Elevations of Prothrombin Concentration (or Activity) of Blood Plasma. S. Shapiro, B. Sherwin and H. Gordimer, New York.—p. 175.
Thrombosis and Gangrene of Right Arm, Associated with Polycythemia Vera: Its Relation to "Effort Thrombosis." W. B. Swartley, S. D. Weeder and E. F. McLaughlin, Philadelphia.—p. 184.
Immediate and Late Results of Perforation of Peptic Ulcer. C. Harrison and F. W. Cooper Jr., Nashville, Tenn.—p. 194.
*Lymphatic and Venous Spread of Carcinoma of Rectum. R. S. Grinnell, New York.—p. 200.
Primary Abscess of Liver Due to Anaerobic Nonhemolytic Streptococcus. F. B. St. John, E. J. Pulaski and J. M. Ferrer, New York.—p. 217.
Severe Trauma to Liver with "Hepatorenal Syndrome." H. McCorkle and F. S. Howard, San Francisco.—p. 223.
Platybasia with Involvement of Central Nervous System. B. S. Ray, New York.—p. 231.
Extralaryngeal Division of Recurrent Laryngeal Nerve: Its Significance in Vocal Cord Paralysis. C. Weeks and J. W. Hinton, New York.—p. 251.
Repair of Direct Inguinal Hernia with Osteoperiosteal Transplant. J. R. Veal, Washington, D. C.—p. 259.
Unusual Viscera in Indirect Inguinal Hernias. W. M. McMillan, Chicago.—p. 266.
*Production of Thrombotic Barrier in Treatment of Varicose Veins. J. T. Gault, Chicago.—p. 271.
Hemisection of Mandible for Recurrent Adamantinoma. J. W. Holloway, Cleveland.—p. 277.
So-Called Dislocation of Lower End of Ulna. H. Milch, New York.—p. 282.
Treatment of Fractures of Olecranon by Longitudinal Screw or Nail Fixation. W. R. MacAusland, Boston.—p. 293.
Regeneration of Joint Transplants and Intracapsular Fragments. H. May, Philadelphia.—p. 297.

Intrapericardial Teratoma and Tumor of Heart.—Beck reports the first successful removal of an intrapericardial teratoma of the heart. The lesion was completely removed, and the patient has remained well for four years. From another patient he removed a tumor-like mass located in the wall of the left ventricle. The identity of the lesion has not been established, but it was probably not a true neoplasm. The patient has been well for eighteen months after operation. An aneurysm of the left ventricle has not developed. The grafting of a segment of pericardium or fascia lata on the ventricle to reinforce the weakened area and to prevent an aneurysm from forming is illustrated.

Lymphatic and Venous Spread of Carcinoma of Rectum.—Of the four main routes by which carcinoma of the rectum may spread, Grinnell discusses two: the lymphatic and the blood stream. The other two routes are direct extension and transplantation through the peritoneal cavity. Seventy-five specimens of the rectum and rectosigmoid were cleared by the modified Spalteholtz technic and studied for the two routes of metastasis. Lymphatic metastasis was found in 41, or 55 per cent of the specimens. Significant intramural lymphatic spread was not seen. The main extramural lymphatic spread was upward along the superior hemorrhoidal vessels. Only 4 of 17 patients with node metastasis, having tumors below the peritoneal reflection, could have had adequate node removal by perineal excision. There was only 1 proved case of lateral lymphatic spread along the middle hemorrhoidal vessels and only 1 of downward spread. Metastasis to the paracolic nodes was not found. The incidence of node metastasis was 18 per cent higher when the tumor was completely annular than when it was not. Evidence of blood vessel invasion was present in 36 per cent of 75 specimens and in 41 per cent of a combined group of 162 colon and rectal tumors. The incidence of such invasion was four times as great in grade 3 as in grade 1 tumors, being present in all the former. Twenty-seven, or 90 per cent, of the 30 cases with visceral metastasis showed blood vessel invasion. Failure to find local blood vessel invasion is strong evidence that no visceral metastasis exists.

Thrombotic Barrier and Varicose Veins.—Gault describes a nonoperative method of limiting the chemical thrombophlebitis that follows retrograde injection of the internal saphenous vein during high ligation to its thigh portion. The internal saphenous vein at the level of the knee is palpated. The vein is injected with 1 cc. of a sclerosing solution (sodium morrhuate). If no thrombosis occurs in three or four days the vein, depending on the caliber of the vessel, is reinjected with 1.5 to 2 cc. of the solution. Any palpable tributary in the region of the knee is similarly treated. Ligation and retrograde injection are performed when a firm thrombus has resulted. This usually takes ten to fourteen days. The occluding thrombus or thrombotic barrier prevents the sclerosing solution injected into the internal saphenous vein at operation from passing below the level of the knee. In 95 cases a thrombotic barrier preliminary to ligation was attempted, and in 62 a firm thrombosis of the saphenous vein at the knee was obtained after the first injection, in 14 two injections were necessary, in 12 three or four injections were required and in 7 no thrombosis was obtained after four injections, and ligation with retrograde injection was performed in the usual manner. The patients in whom a thrombotic barrier was produced were able to engage in their usual pursuits with no discomfort or disability. Possibly the absence of disabling symptoms may be explained by two factors: the limitation of the thrombophlebitic and periphlebitic process to a smaller surface and the absence of inflammation in the lower region of the knee and leg, resulting in painless locomotion.

Archives of Otolaryngology, Chicago

36:1-170 (July) 1942

Myalgia of Pharynx. H. L. Williams and E. C. Elkins, Rochester, Minn.—p. 1.
Acute Mastoiditis in Diabetes Mellitus: Analysis of Forty-Nine Cases with Report of Observations at Necropsy in Eleven. J. G. Druss and B. Allen, New York.—p. 12.
*Modified Fenestration Technic: Analysis of Results in One Hundred and Forty-One Consecutive Operations. G. E. Shambaugh Jr., Chicago.—p. 23.
Vasomotor Rhinitis in the Tropics. L. Jaffé, Tegucigalpa, Central District, Honduras.—p. 47.
Clinical Aspects of Functional Hoarseness. Hertha Tarrasch, Madison, Wis.—p. 53.
Frequency of Hoarseness Due to Phonation with the Thyroarytenoid Lips: Jackson's Dysphonia Plicae Ventricularis. C. H. Voelker, Stillwater, Okla.—p. 71.
*Prevention of Death in Status Asthmaticus: Value of Bronchoscopy. L. Bases and A. Kurtin, New York.—p. 79.
Dermoid Cysts of Dorsum of Nose. H. Brunner and J. W. Harned, Chicago.—p. 86.
Vestibular Kinetovisual Function and Kinetic Vision. E. R. Arellano, Havana, Cuba.—p. 95.
Syndrome of Posterior Inferior Cerebellar Artery. A. A. Cinelli, New York.—p. 108.
Congenital Preauricular Cysts and Fistulas. P. N. Pastore and J. B. Erich, Rochester, Minn.—p. 120.
Plastic Surgery. R. H. Ivy and H. A. Miller, Philadelphia.—p. 135.

Modified Fenestration Technic.—Shambaugh modified the original fenestration technic, used it in 103 cases and states that the modification adds to the surgical treatment of otosclerosis, as with it he has obtained lasting and significant hearing improvement in about 75 per cent of cases as against 25 per cent with the original technic. The most important improvement of the modified fenestration seems to be the use of constant irrigation. Six months is the minimal postoperative period that must elapse before results are regarded as "final" and probably permanent. The osteogenesis and fibrosis causing closure of a fistula are most active during the first three months and in most cases tend to reach a state of equilibrium about six months after operation. In every revision failure was due to closure of the fistula by new bone or fibrous tissue. At least six, and preferably eight, months should elapse before a revision is attempted so as to permit active osteogenesis and fibrosis to reach a state of equilibrium. With revisions and bilateral operations in some instances a significant improvement in hearing (average 24.4 decibels) was secured in 87 of 103 cases in which operation was performed between July 1938 and September 1941. No dead labyrinths, serious complications or fatalities resulted in one hundred and ninety-four consecutive operations performed on 154 patients from July 15, 1938 to April 24, 1942.

Status Asthmaticus.—Bases and Kurtin state that 6 of the 7 patients who died of status asthmaticus at the Mount Sinai Hospital and on whom necropsy was performed in the past fifteen years died from blocking of the tracheobronchial airway by excessive outpouring of secretion. A review of similar cases from the literature, that is, only those in which death was due to status asthmaticus, reveals that in many death could have been averted by bronchoscopic removal of the obstructing secretion. The observations in the 7 cases and those reported in the literature are so striking that it is felt that bronchoscopic suction should be performed on all patients who, in spite of all therapy, continue to get worse. If increasing dyspnea, deepening cyanosis and progressive weakness lead to semistupor, at least at this point, if not before, bronchoscopy should be performed. In 1 such case in which bronchoscopy was performed there was immediate improvement. During the next few days in an oxygen tent the patient continued to improve, though occasional asthmatic episodes still occurred. There was no recurrence of cyanosis or dyspnea. The bronchoscopic aspiration was life saving.

Archives of Physical Therapy, Chicago

23:385-448 (July) 1942

Functional Disturbances Attributable to Development of Erect Posture. Frances Baker, San Francisco.—p. 389.
Kenny Method of Treatment for Infantile Paralysis. W. H. Cole, J. F. Pohl and M. E. Knapp, Minneapolis.—p. 399.
Electrocution by Home Treatment Device. R. Kovacs, New York. —p. 419.
Injuries to Muscles. W. H. Northway, San Francisco.—p. 420.

Archives of Surgery, Chicago

45:183-334 (Aug.) 1942

*Shock Produced by Crush Injury: Effects of Administration of Plasma and Local Application of Cold. G. W. Duncan and A. Blalock, Baltimore.—p. 183.
Osseosonometry: I. Use of Percussion-Auscultation in Fractures. W. H. McGaw, Cleveland.—p. 195.
Solitary Congenital (Dysontogenetic) Cyst of Pancreas: Report of Case. K. K. Nygaard and L. J. Stacy, White Plains, N. Y.—p. 206.
Management of Rupture of Uterus: Report of Forty-Four Cases. F. E. Whitacre and L. Y. Fang, Peiping, China.—p. 213.
Treatment of Burns of Thermal Origin. H. C. Hull, Baltimore.—p. 235.
Hepatic Function and Formation of Hippuric Acid: Response to Administration of Aminoacetic Acid and Sodium Benzoate in Patients with Subnormal Capacity for Synthesis. J. G. Probstein and S. Londe, St. Louis.—p. 253.
*Prothrombin Test as Diagnostic and Prognostic Aid. W. E. Abbott and W. D. Holden, Cleveland.—p. 261.
*Effect of Desoxycorticosterone Acetate in Postoperative Shock. H. Koster and L. P. Kasman, Brooklyn.—p. 272.
Practical Method of Predicting the Growth of Femur and Tibia in the Child. G. G. Gill and L. C. Abbott, San Francisco.—p. 286.
Early Carcinoma in Hyperplastic Thyroid. J. M. Emmett and M. L. Dreyfuss, Clifton Forge, Va.—p. 316.
Absorption of Surgical Gut (Catgut): IV. Recommendations for Absorbability and Digestibility Specifications. H. P. Jenkins, Chicago. —p. 323.

Treatment of Shock from Crush Injury.—Duncan and Blalock tried to prevent the peripheral circulatory failure that follows crush injury in animals. Practically all such control animals died after an average survival of seven and fifty-five hundredths hours. In his experiment he hoped to prolong life so as to observe the animals during the period in which oliguria and uremia followed by death develops in clinical cases of crush syndrome. The injection of plasma to 15 animals prolonged the life of 6 sufficiently for observation and in spite of the similarity of the early essential features oliguria, casts in the urine, uremia and death in several days was not observed in the experiments. Maintenance of the extremity at a low temperature during the time the mechanical press was in place exerted a definitely protective influence. This was probably due to the fact that metabolism of the tissues was reduced and that less injury resulted from the inadequate blood supply. Cooling of the part after the press was removed did little if any good, as most likely the mechanical injury and the anoxia had already exerted their deleterious effects. In several recent experiments the press was left on the extremity for fifteen rather than for five hours when more blood plasma was administered intravenously than was lost at the site of injury. These animals died within twenty-four hours after the press was removed, probably from absorption of toxic products from the injured and ischemic extremity. The prolonged anesthesia was probably an additional factor. Further studies are indicated.

Prothrombin Test.—Abbott and Holden employed the prothrombin test on 120 patients, concluding that the test is helpful in making an accurate diagnosis in the jaundiced patient. Also in many instances the extent of hepatic dysfunction is suggested. The results of the test on 36 patients with intestinal dysfunction further support the previous conclusion that hypoprothrombinemia develops from lack of adequate food, loss of bile from the intestinal tract or a combination of the two. Most of the 120 patients had hypoprothrombinemia. Patients with relatively severe hepatic damage did not respond to vitamin K therapy, while those with obstruction to the common duct practically always responded to adequate therapy. The test can help the physician to determine the severity of hepatic damage in cases of burns, and an early and accurate prognosis can be formulated by repeated tests.

Desoxycorticosterone Acetate for Postoperative Shock.—The results of the preoperative administration of desoxycorticosterone to animals has led Koster and Kasman, among others, to apply the method to 100 selected alternate operative patients. They used the mortality rate as the criterion of the efficacy of the therapy. The mortality rate was 11 per cent among the 100 treated patients and 9 per cent among the controls. Even if reversed, the difference would have no significance. Factors other than shock may have contributed to the deaths in both groups. Therefore, since there was no reduction in the mortality rate in the treated group, it may be concluded that desoxycorticosterone acetate had no influence in preventing or in favorably influencing postoperative shock. The enthusiastic reports by other workers of its value for human beings are not supported by the authors' data.

Bulletin of Johns Hopkins Hospital, Baltimore

71:1-46 (July) 1942

Sympathetic Denervation of Feet and Legs Occurring Spontaneously or as Result of Disease: Preliminary Report. H. B. Shumacker Jr., Baltimore.—p. 1.
Ultracentrifugation of Antidiuretic, Chloruretic and Pressor Factors of Posterior Pituitary Extracts. G. C. Ham, Charlottesville, Va., and M. Rosenfeld, Baltimore.—p. 18.
Investigation into Mechanism of Weltmann Serum Coagulation Reaction: Preliminary Report. S. Scherlis and D. S. Levy, Baltimore.—p. 24.
Specificity of Periarterial Fibrosis of Spleen in Disseminated Lupus Erythematosus. I. H. Kaiser, Baltimore.—p. 31.

Bulletin New York Academy of Medicine, New York

18:495-558 (Aug.) 1942

Nutrition and the Nation at War. J. S. McLester, University, Ala. —p. 497.
*Prophylactic Treatment of Rheumatic Fever by Sulfanilamide. Caroline Bedell Thomas, Baltimore.—p. 508.
Evolution of Our Present Knowledge of Hypersensitiveness. B. Ratner, New York.—p. 527.
Diagnosis of Etiologic Factors in Female Sterility. I. C. Rubin, New York.—p. 537.

Prophylactic Treatment of Rheumatic Fever by Sulfanilamide.—Thomas points out that sulfanilamide prophylactically (from October to June) is effective in preventing recrudescences of rheumatic fever, that it is safe and that if the treatment is stripped to its essentials its cost will be far less than that of caring for the cardiac invalid that the rheumatic subject will eventually become. An effort should be made to treat early every person who has had rheumatic fever with small daily doses of sulfanilamide and to continue the treatment for years. There are more than a million persons in the United States who have suffered from rheumatic fever; 40,000 of them die each year of the disease. To postpone the inauguration of a program for combating rheumatic fever with prophylactic sulfanilamide until after the war would be to lose sight of the immediate importance of this public health problem.

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California and Western Medicine, San Francisco

57:1-114 (July) 1942

Burn Wounds: Their Treatment. D. D. Weaver, Oakland.—p. 9.
The Physician and the National Nutrition Program. D. L. Wilbur, San Francisco.—p. 12.
Governmental Agencies and Medical Practice. H. F. Peart, San Francisco.—p. 14.
Grafting of Skin: Advantages of Padgett Dermatome. G. W. Pierce, San Francisco.—p. 16.

Connecticut State Medical Journal, Hartford

6:581-690 (Aug.) 1942

Industrial Health and War Problem. V. G. Heiser, New York.—p. 583.
Fundamentals of Good Nutrition. J. Ernestine Becker, Baltimore. —p. 587.
Arterial Hypertension. I. H. Page, Indianapolis.—p. 593.
Unusual Reaction to Protamine Zinc Insulin: Case Report. H. A. Archambault and M. R. Moore, Norwich.—p. 595.
Roentgen Therapy in Postoperative Parotitis. D. C. Patterson, Bridgeport.—p. 597.
Injuries to Head, Spinal Cord and Peripheral Nerves. W. J. German, New Haven.—p. 599.
Treatment of Wounds of Soft Tissue. E. J. Ottenheimer, Willimantic. —p. 608.
Systemic Effect of Injury—Peripheral Circulatory Failure ("Shock"). S. C. Harvey, New Haven.—p. 613.
Treatment of Simple Fractures. A. L. Bassin, New Haven.—p. 617.

Delaware State Medical Journal, Wilmington

14:157-174 (July) 1942

Precancerous Lesions of Uterine Cervix. Margaret Castex Sturgis, Philadelphia.—p. 157.
Cancer in Prostate Gland. B. S. Vallett, Wilmington.—p. 163.

Florida Medical Association Journal, Jacksonville

29:1-52 (July) 1942

Injuries of Chest. D. C. Elkin, Atlanta, Ga.—p. 11.
Diagnosis of Endocrine Disorders in Gynecology, Obstetrics and General Practice. J. R. Cogan, Miami Beach.—p. 17.
Study of Conchology as Form of Occupational Therapy. M. Moore, Boston.—p. 20.
Massive Resection of Small Intestine: Excision of Twelve Feet Six Inches with Recovery. J. C. Pate, Tampa.—p. 28.
Meralgia Paresthetica. W. M. Davis, St. Petersburg.—p. 31.
Diseases of Gallbladder and Their Recognition. J. R. Valloton, Daytona Beach.—p. 32.

Journal of Infectious Diseases, Chicago

70:193-286 (May-June) 1942. **Partial Index**

In Vitro Resistance of Poliomyelitis Virus to Chemical Agents. E. W. Schultz and F. Robinson, Stanford, Calif.—p. 193.
Chronic Choroiditis Produced with Streptococcus Viridans and Streptococcus Hemolyticus in Normal and in Immunized Rabbits. S. Rothbard and D. M. Angevine, New York.—p. 201.
Studies with Sulfabenamide: Parts I and II. L. Hansen and W. A. Kreidler, Philadelphia.—p. 208.
*Diagnostic Value of Complement Fixation in Malaria. Anna Dean Dulaney, W. K. Stratman-Thomas and O. S. Warr, Memphis, Tenn. —p. 221.
Use of Egg Protection Test for Recognition of St. Louis Encephalitis in Man. R. J. Blattner and Jean V. Cocke, St. Louis.—p. 226.
Decomposition of Pectin and Galacturonic Acid by Intestinal Bacteria. S. C. Werch, R. W. Jung, A. A. Day, T. E. Friedemann and A. C. Ivy, Chicago.—p. 231.
Effect of Various Sex Hormones on Experimental Pneumococcic Infections in Mice. E. von Haam and Irene Rosenfeld, Columbus, Ohio. —p. 243.
Mosquitoes and Encephalitis in Yakima Valley, Wash.: Parts I to V. W. M. Hammon, W. C. Reeves, B. Brookman, E. M. Irumi, San Francisco; F. B. Bang, Princeton, N. J., and C. M. Gjullin, Portland, Ore.—p. 263.

Complement Fixation in Malaria.—According to Dulaney and her associates, 102 of 125 patients with malaria parasites in blood films gave a positive complement fixation test for malaria with Plasmodium knowlesi antigen. Approximately one third of them had received some treatment before the blood for the tests was obtained. Positive tests were obtained from 15 of 192 presumably malarious patients with negative blood films. Malaria could not be ruled out in this group. The complement fixation and blood film test agreed in 88 per cent of the cases when the two tests could be compared simultaneously. Likewise twenty-four positive complement fixation tests were obtained from 170 presumably nonmalarious patients; eighteen of the serums came from patients known to have leprosy, amebic dysentery or Chagas' disease. Seven of 188 normal persons gave a nonspecific reaction. Complement fixation using the P. knowlesi antigen may prove useful as a supplementary test to the blood film.

Journal of Lab. and Clinical Medicine, St. Louis

27:1231-1360 (July) 1942

*Hematologic Values for Normal Healthy Men 16 to 25 Years of Age. C. J. Hamre and M. H. Au, Honolulu, Territory of Hawaii.—p. 1231.
Agglutinin Response of Normal Persons to Skin Tests with Brucellergen and Brucella Vaccine. W. M. M. Kirby and L. A. Rantz, San Francisco.—p. 1244.
Observations on Electrocardiogram in Epilepsy and Comparison with Electrocardiogram in Seizures Following Convulsant Drug Therapy. T. Ziskin and A. G. Dumas, Minneapolis.—p. 1249.
Peripheral Nerves in Chronic Atrophic Arthritis. H. A. Freund, G. Steiner, B. Leichtentritt and A. E. Price, Detroit.—p. 1256.
Brucellosis: Studies Emphasizing Strain Variation in Serologic Testing. F. E. Angle, W. H. Algie and Dorothy Morgan, Kansas City, Kan.—p. 1259.
*Recovery of Rabies Virus from Brain of Undiagnosed Case. M. Schaeffer and Ann G. Leider, New York.—p. 1263.
Sulfonamide Therapy of Streptococcic Infections by Intravenous Drip Method, with Note on Toxicity of Neoprontosil by Intravenous Administration. J. A. Kolmer and H. Brown, Philadelphia, with technical assistance of Anna M. Rule and Loraine Groskin.—p. 1268.
Chemotherapeutic Studies of 2-Sulfanilyl-3-5 Dihydrothiazole (Sulfathiazoline). G. W. Raiziss; Marie Severac, Philadelphia, and J. C. Moetsch.—p. 1276.
Surface Area of Human Erythrocyte. Mollie Bernstein and H. M. Chesluk, Eloise, Mich.—p. 1280.
*Sarcoidosis: Consideration of Clinical and Histologic Criteria Differentiating Sarcoidosis from Tuberculosis. H. L. Rakov and J. S. Taylor, Kingston, N. Y.—p. 1284.
Clinical Studies with Aid of Radiophosphorus: V. Early Effects of Small Amounts of Radiophosphorus on Blood Cell Levels, Uptake and Excretion. B. V. A. Low Beer and Anne de G. Treadwell, Berkeley, Calif.—p. 1294.
Changes in Creatinine Clearance and Urine Flow of Dog During Fever. H. J. Nicholes, B. L. Boynton and R. C. Herrin, Madison, Wis.—p. 1306.

Hematologic Values for Normal Healthy Men.—The level of all the blood elements was determined by Hamre and Au of 137 normal male university students from 16 to 25 years of age. Significant differences as to age and race in the blood values did not occur. The mean values for the various blood elements for these men of the Hawaiian Islands were comparable to those for men of other geographic regions given by other investigators. Therefore particular or peculiar types of normal blood values do not exist for adult men of the Hawaiian Islands.

Recovery of Rabies Virus from Brain.—Schaeffer and Leider recovered rabies virus from a person the cause of whose death was obscure. The presence of virus in the brain in this undiagnosed case was established by animal passages, by demonstration of Negri bodies in the brains of inoculated animals and by immunologic methods. Following the recovery of virus, further investigation revealed a history of dog bite and other data pertinent to rabies in a person whose antemortem diagnosis was "psychoneurosis and acute anxiety." The need exists to be ever mindful that atypical cases may occur in communities in which rabies is endemic.

Sarcoidosis.—Three cases of sarcoidosis are reported by Rakov and Taylor to illustrate how easily the microscopic picture may be mistaken for tuberculosis by the pathologist who is not familiar with the disease, which has a predilection for the lymphatic system without cutaneous manifestations. In case 1 only after a series of sections of tonsils removed five years previously was reexamined was a single miliary sarcoid demonstrated. In case 2 studies were not permitted and the authors were unable to observe at microscopy the nonpalpable glands or tonsils. In case 3 many signs and symptoms of a disseminated tuberculous process were presented. Subsequent study proved the diagnosis of miliary tuberculosis to be incorrect. Reexamination of previously extirpated lymph nodes established the true diagnosis. Since generalized Boeck's sarcoidosis is usually a benign, nonfatal disease, there is no doubt that many reported cures of miliary tuberculosis are instances of recovered sarcoidosis. The authors urge that all apparent cases of noncaseating tuberculosis be studied with sarcoidosis in mind.

Journal of Pharmacology & Exper. Therap., Baltimore

75:187-282 (July) 1942. Partial Index

Effect of Hookworm Damage on Levels of Quinine Attained in Blood and Urine of Dogs Following Single Doses of Quinine Sulfate. J. C. Andrews and R. D. Webb, Chapel Hill, N. C.—p. 191.
Method for Bioassay of Digitalis in Humans. H. Gold, M. Cattell, H. L. Otto, N. T. Kwit and M. L. Kramer, New York.—p. 196.
Effects of Cocaine and Sympathomimetic Amines on Humoral Transmission of Sympathetic Nerve Actions. W. S. Inwrence, M. C. Morton and M. L. Tainter, San Francisco.—p. 219.
Toxicologic Study of Succinyl Sulfathiazole. A. D. Welch, P. A. Mattis and A. R. Latven, Glenolden, Pa.—p. 231.
Visceral Lesions Associated with Tribromethanol Administered Rectally. A. H. Maloney, Washington, D. C.—p. 247.
In Vivo Method for Evaluation of Germicidal Substances Used for Skin Disinfection. R. W. Sarber, Cincinnati.—p. 277.

Kansas Medical Society Journal, Topeka

43:281-324 (July) 1942

Synthetic Estrogens: Their Future; Therapy of Hypogonadism with Stilbestrol. C. M. MacBryde, St. Louis.—p. 281.
Bilateral Giant Fibroadenoma Simulating Malignancy in Pregnancy. H. L. Reed and A. E. Hiebert, Wichita.—p. 284.
Treatment of Ulcerative Colitis with Nisulfadine and Nisulfazole. R. H. Major and H. L. Douglas, Kansas City.—p. 287.
Public Health and War Emergency in Kansas. R. M. Oxandale, Topeka.—p. 289.
Roentgenographically Demonstrable Causes of Cyanosis in Infant and Newborn. J. F. Bowser, Xansas City.—p. 291.
"Dyspepsia" Due to Polyps of Cervix. M. A. Walker, Kansas City. —p. 293.

Medical Annals of District of Columbia, Washington

11:247-290 (July) 1942

*Beriberi Heart Disease and Pulmonary Embolism: Report of Three Cases. H. H. Hussey and S. Katz, Washington.—p. 247.
Barbiturates and Some of Their Side Effects. G. B. Roth, Washington. —p. 254.
Localization and Interpretation of Cortical Dysfunction by Electroencephalography. R. Cohn, Washington.—p. 261.
Diagnosis of Neurocirculatory Asthenia. P. R. Wilner, Camp Edwards, Mass.—p. 264.
Gas Bacillus Infection: Report of Unusual Case. M. C. Cobey, Keesler Field, Biloxi, Miss., and M. Mollari, Washington.—p. 267.

Beriberi Heart Disease and Pulmonary Embolism.—Hussey and Katz present 3 fairly typical cases of beriberi heart disease in young men who drank heavily, ate little, had evidence of associated vitamin deficiency states and had no other apparent etiologic factor for their heart failure. Symptoms and signs of heart failure were obvious. Two of the patients recovered from their initial heart failure and remained well until they resumed drinking and abstaining from food. The third patient, who died in his first attack, had shown considerable improvement when fatal pulmonary embolism to the right lung developed. His failure to improve more rapidly was probably due to a large infarct in the left lung. In 2 of the cases pulmonary embolism arising apparently from a mural thrombus in the right side of the heart was the immediate cause of death. In the other 1 a postmortem examination was not made, but the description of the death suggests pulmonary embolism more strongly than the idiopathic vasomotor collapse of beriberi. With one exception (Dock, 1940) there is no reference in the literature to the existence of mural thrombi and embolic phenomena in beriberi heart disease. Dock suggested that some cases of idiopathic cardiac hypertrophy may represent beriberi heart disease. Embolism may be a more important feature in beriberi heart disease than is generally appreciated. The arm to tongue circulation time in 2 cases was moderately prolonged and in 1 the prolongation was severe. The circulation time depends on several variables, the cardiac output, the state of the arteriolar bed and the venous pressure. Probably when the cardiac output is fairly well sustained and the arterioles are wide open the circulation time will be relatively normal and the venous pressure high. As these conditions may occur in beriberi heart disease and in other etiologic types of heart disease they are not diagnostic for any one type. Furthermore, when the variables are differently arranged in beriberi heart disease the circulation time will be greatly and constantly prolonged.

Missouri State Medical Assn. Journal, St. Louis

39:233-272 (Aug.) 1942

Medical Officer in Our Wartime Army. G. F. Lull, Washington, D. C. —p. 233.
Nature of Arterial Hypertension. I. H. Page, Indianapolis.—p. 237.
Gastric Ulcer. W. Walters, Rochester, Minn.—p. 240.
Some Medical Emergencies. G. Herrmann, Galveston, Texas.—p. 243.
Indications for Thyroidectomy. C. J. Hunt and P. F. Hunt, Kansas City.—p. 250.
*Benzedrine Sulfate in Dysmenorrhea. W. B. Brown, Columbia.—p. 253.

Amphetamine Sulfate in Dysmenorrhea.—Brown gave amphetamine sulfate for six months to 55 women 16 to 20 years of age who complained of pain during menstruation. To a control group of 20 he gave placebos of lactose. Forty-five of the 55 who took the amphetamine sulfate responded favorably to the treatment, as did 12 of the 20 on placebo therapy. Those who were not relieved by either medication had histories of severe menstrual cramps. The fact that the placebo seemingly brought relief suggests psychotherapy as an important factor in the treatment of menstrual pain.

Nebraska State Medical Journal, Lincoln

27:229-264 (July) 1942

Fractures About Elbow Joint Especially in Children. H. E. Conwell, Birmingham, Ala.—p. 229.
Medical Licensure in Nebraska. J. W. Holloway Jr., Chicago.—p. 233.
Prophylaxis of Maternal Birth Injury. M. E. Grier, Omaha.—p. 237.
Value of Electroencephalography in Neurology. A. E. Bennett, Omaha. —p. 239.
Treatment of Common Foot Disorders. W. R. Hamsa, Omaha.—p. 242.
"Vegetable" Appendix. M. J. Breuer, Lincoln.—p. 246.
Chronic Prostatitis as Focus of Infection. P. S. Adams, Omaha.—p. 248.
Present Role of Sulfaguanidine in Medicine and Surgery. A. F. Jonas, Omaha.—p. 251.

New England Journal of Medicine, Boston

227:1-38 (July 2) 1942

Relation of Medicine to the Emergency. F. H. Lahey, Boston.—p. 1.
Procurement and Assignment Service for Physicians in Massachusetts. R. Fitz, Boston.—p. 2.
Civilian Defense in Massachusetts. E. C. Cutler, Boston.—p. 7.
Physician's Role in First Aid. A. W. Reggio, Boston.—p. 10.
Medical School Plans for the Emergency. B. F. Avery, Boston.—p. 13.
Hospital Preparedness. C. F. Wilinsky, Boston.—p. 15.
Diagnostic Roentgenology: Dangers Associated with Fluoroscopy. R. Schatzki, Boston.—p. 18.

227:39-86 (July 9) 1942

Recognition of Occupational Dermatoses. C. G. Lane, Boston.—p. 39.
Therapeutic Evaluation of Testosterone in Peripheral Vascular Disease. S. B. Beaser and T. B. Massell, Boston.—p. 43.
Use of Sulfanilamide for Treatment of Infection Due to Microaerophilic Streptococci: Report of Case. A. Hurwitz and E. L. Prien, Boston. —p. 46.
Physical Therapy for Diseases of Nervous System. A. L. Watkins, Boston.—p. 48.

227:87-120 (July 16) 1942

Cerebral Subdural Hematomas: Study of 310 Verified Cases. D. Munro, Boston.—p. 87.
Instruction of Laymen in Emergency Splinting of Fractures. B. M. Bosworth, New York.—p. 95.
Effect of Postoperative Intercostal Nerve Block on Pulmonary Ventilation. A. Starr and S. Gilman, Boston.—p. 102.
Arterial Hypertension. R. W. Wilkins, Boston.—p. 104.

New Jersey Medical Society Journal, Trenton

39:311-360 (June) 1942

Wound Infections—Diagnosis and Treatment. I. E. Deibert, Camden. —p. 319.
Postoperative Complete Facial Palsy with Recovery: Report of Case. A. F. Moriconi, Trenton.—p. 322.
Some Problems in Management of Cancer of Rectum. H. I. Silvers, Atlantic City.—p. 323.
Treatment of Thrombophlebitis. S. Z. Hawkes, Newark.—p. 328.
Treatment of General Peritonitis of Appendical Origin. R. K. Tether, Closter.—p. 331.

39:361-414 (July) 1942

Treatment of War Wounds of Thorax. G. N. J. Sommer Jr., Fort Dix. —p. 367.
Urinary Tract Pathology Associated with Carcinoma of Cervix. I. Markowitz and J. D. Katz, Jersey City.—p. 373.
Hypophysial Deficiency Resembling Simmond's Disease: Successful Treatment with Pellet Implantation of Desoxycorticosterone Acetate: Case. T. P. Prout and C. S. Thomson, Summit.—p. 376.
The Itch to Write. H. A. Davidson, Newark.—p. 380.
Biliary Dyskinesia. A. J. Barbano, New Brunswick.—p. 383.
Recovery from Cerebellar Abscess of Otogenic Origin: Report of Case. A. F. Moriconi, Trenton.—p. 385.

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New Orleans Medical and Surgical Journal

95:1-52 (July) 1942

History of Modern Public Health Movement. F. A. Musacchio, Crowley, La.—p. 1.
Pool Plasma Bank as Used by the Louisiana State University Department of Obstetrics and Gynecology. B. J. Lehman and M. Suter, New Orleans.—p 12.
Management of Retrodisplacements of Uterus, with Special Reference to Indications for Surgical Therapy. Hilliard Eve Miller, New Orleans.—p. 15.
Artificial Pneumothorax in General Practice. O. E. Dalton, E. L. Landry, New Iberia, La., and H. C. Voorhies, Lafayette, La.—p. 22.
Vertigo. E. G. Walls, New Orleans.—p. 28.
Blood Volume in Some Common Clinical Conditions. G. R. Meneely, New Orleans.—p. 33.
Postpartal Hematomas of Vulva and Vagina: Case Reports. J. P. Michaels and J. S. Herring, New Orleans.—p. 37.

New York State Journal of Medicine, New York

42:1215-1310 (July 1) 1942

Comparison of Tuberculin Patch Test with Mantoux Test. H. J. Brock and F. T. Schnatz, Buffalo.—p. 1241.
Medical and Surgical Management of Empyema in Childhood. S. L. Ellenberg and A. T. Martin, New York.—p. 1243.

42:1311-1406 (July 15) 1942

Pruritus Ani, with Special Reference to Therapeutic Tattooing with Mercury Sulfide. R. Turell, New York.—p. 1335.
Irradiation in Infections. L. B. Goldman, Long Island, N. Y.—p. 1341.
Epidemiologic Methods Used in Control of Venereal Diseases in New York City. T. Rosenthal and H. Goodman, New York.—p. 1346.
*Blood Stream Infection of Cortex of Kidney. L. E. Gibson, Syracuse, N. Y.—p. 1350.
Simplified Method for Administration of Blood Plasma in Emergencies. L. K. Pitman, New York.—p. 1356.
Treatment of War Burns. C. Bove, New York.—p. 1366.
Ninth Cranial Nerve: Its Close Proximity to Tonsil and Its Surgical Significance in Tonsillectomy. R. H. Fowler, New York.—p. 1371.

42:1407-1502 (Aug. 1) 1942

Industrial Ophthalmology in War Effort: Need for More Realistic Ophthalmic Service in Industry. A. C. Snell, Rochester.—p. 1435.
Id.: Stereoscopic Vision in Industry. M. Davidson, New York.—p. 1441.
Id.: Problem of Faulty Stereopsis in Industry; Preliminary Study of Certain Operations in Publishing Industry. L. D. Redway, Ossining.—p. 1445.
Id.: Industrial Ophthalmology from Public Health Point of View. L. Greenburg, New York.—p. 1448.
New York State Association of School Physicians: Presidential Address. W. E. Ayling, Syracuse.—p. 1450.
School Health and Nation's Health. W. W. Bauer, Chicago.—p. 1454.
Integrating Mental Hygiene with Work of School Physician and School Nurse in Wartime. F. L. Patry, Albany.—p. 1460.
School Health Programs in Wartime. E. E. Kleinschmidt, Chicago.—p. 1463.
Maternal Mortality Study in Buffalo, N. Y., 1935-1940. L. A. Siegel, Buffalo.—p. 1472.

Blood Stream Infection of Cortex of Kidney.—Nontuberculous infection of the renal cortex due to invasion by pus producing organisms is a distinct and important clinical entity, according to Gibson. It is difficult to diagnose, as the clinical signs are obscure and urinary symptoms are absent. As a consequence the condition is frequently not recognized, and its complications—renal carbuncle and perirenal abscess—are rarely diagnosed until a high morbidity has been produced. In most cases the invading organism is Staphylococcus aureus, which reaches the kidney by the blood stream from some peripheral infection. A careful search for peripheral infection affords the best diagnostic aid. It is distinguished from pyelonephritis by the relative lack of urinary symptoms in proportion to the severity of the illness and by the fact that in cortical abscess the staphylococcus is more likely to be found in the urine.

North Carolina Medical Journal, Winston-Salem

3:265-324 (June) 1942

The Doctor and the Emergency. F. W. Griffith, Asheville.—p. 265.
Responsibilities of the Civilian Physician in Present War Emergency. H. C. Coburn Jr., Fort Bragg.—p. 270.
Medical Preparedness in National Defense. J. W. R. Norton, Fort Bragg.—p. 275.
Treatment of Endocrine Sterility in Women. E. C. Hamblen, Durham.—p. 278.
Few Remarks on Treatment of Fractures. A. R. Shands Jr., Wilmington, Del.—p. 282.
Diagnosis of Obscure Fever. G. T. Harrell, Winston-Salem.—p. 287.
Scurvy in Children. D. D. Moise, Sumter, S. C.—p. 290.
Toxoplasmosis: Brief Review. W. C. Thomas, Winston-Salem.—p. 295.
Prolonged Labor: Its Etiology and Management. L. T. Monroe, Kannapolis.—p. 297.
Duodenal Ulcer in Newborn Infant. E. V. Benbow, Winston-Salem.—p 303.

3:325-380 (July) 1942

Recent Advances in Cardiovascular Diagnosis and Treatment. P. D. White, Boston.—p. 325.
Structural Basis of Psychiatry. B. J. Alpers, Philadelphia.—p. 332.
Undulant Fever from Standpoint of the General Practitioner of Medicine. A. E. Keller, Nashville, Tenn.—p. 340.
Surgical Diseases of Spleen, with Review of Splenectomies at the Duke Hospital During the Past Ten Years. H. M. Schiebel, Durham.—p. 347.
Endocrine Functions in Pregnancy. A. Grollman, Winston-Salem.—p. 351.
*Arachnodactyly (Marfan's Syndrome). A. A. Barron, Charlotte.—p. 353.
Note on Some Experimental Results Suggesting Use of Sodium Phentetiothalein in Treatment of Enteric Infections of Bacillary Origin. F. H. Hesser, Durham.—p. 359.
Inheritance of Certain Varieties of Mental Defect. W. Allan, Charlotte, and S. L. Halperin.—p. 363.

Arachnodactyly (Marfan's Syndrome).—Barron discusses the symptoms of arachnodactyly found in a family group; in addition to the arachnodactyly 1 member also had recurrent lymphocytic meningitis. This patient was the youngest of a family of 8, 6 of whom presented symptoms of arachnodactyly. The disease had apparently been inherited from the mother's side of the family, probably as a prominent mendelian characteristic. The mother and 4 of her 9 siblings had some symptoms of arachnodactyly. The maternal grandfather and at least 4 of his siblings are also believed to have had some feature of the syndrome. Four of the siblings of the present family had ectopia lentis. Of these 4, 1 had a left lumbar scoliosis of the spine, while another had had two acute attacks of lymphocytic meningitis and some chronic symptoms suggesting involvement of the central nervous system. There is no proof that the concurrence of meningeal and arachnodactylous symptoms was a coincidence or that the two chronic conditions were associated. The author cites the case in the hope of adding to the knowledge concerning the development of arachnodactyly. It is suggested that the pediatrician, the orthopedist, the ophthalmologist, the internist and the neuropsychiatrist should have the symptoms of arachnodactyly in mind so that patients may not be unsatisfactorily treated for isolated clinical symptoms such as malnutrition, spinal curvature or apparent mental deficiency.

Northwest Medicine, Seattle

41:183-220 (June) 1942

Chemotherapy of Tuberculosis. K. Emerson, New York.—p. 185.
Treatment of Pulmonary Tuberculosis: Follow-Up Study, with Special Reference to Collapse Therapy. H. G. Trimble, Oakland, Calif.—p. 190.
Tuberculin Patch Test: Its Evaluation as Compared to Mantoux Purified Protein Derivative Test. P. H. Narodick, Seattle.—p. 193.
Lesions of Intervertebral Disk: Facts and Fallacies. P. G. Flothow, Seattle.—p. 196.
Torsion of Spermatic Cord: Report of Case. E. N. Layton, Colfax, Wash.—p. 202.
Unusually Large Dose of Sulfathiazole: Report of Case. C. E. Conner, Cashmere, Wash.—p. 204.
Premalignant Lesions of Colon, Rectum and Anus. E. D. Parkinson, Boise Idaho.—p. 206.
Treatment of Brucellosis by Use of Sulfaguanidine. E. S. Sarvis, Sumas, Wash.—p. 208.

41:221-258 (July) 1942

Surgical Treatment of Biliary Diseases. H. B. Stone, Baltimore.—p. 225.
*Lesions of Vitamin A Deficiency: Their Local Character and Chronicity. J. V. Straumfjord, Astoria, Ore.—p. 229.
Vitamins Are Not What I Thought. L. L. Ely, Glendale, Calif.—p. 233.
Roentgen Diagnosis of Lesions of Gastrointestinal Tract. G. W. Holmes, Boston.—p. 235.
Treatment of Congenital Clubfoot in Children. J. B. Davis, Portland, Ore.—p. 238.
Thromboembolic Phenomena: Practical Considerations of Therapy. M. L. Johnson, Baltimore.—p. 241.
Epidemic Keratoconjunctivitis: Superficial Punctate Keratitis. A. F. de Roetth, Spokane, Wash.—p. 246.
Control of Fertility Without Contraception. J. V. Schwind, Tacoma, Wash.—p. 248.

Lesions of Vitamin A Deficiency.—During the course of treating vitamin A deficiency, Straumfjord has observed that not only the lesions of follicular hyperkeratosis but other lesions, at the present time not attributable to vitamin A deficiency,

such as corns, keratosis and acne vulgaris, disappeared. A histologic feature common to these conditions is a local increase in cornification. The incidence of the common cold and the course of chronic sinus infection are likewise so definitely influenced when 100,000 units of vitamin A is given for two years or more that it is difficult to escape the conclusion that insufficient intake of vitamin A plays an important part in their pathogenesis. The follicular hyperkeratosis occurs on the back, elbows, buttocks, calves of the legs and posterolateral aspect of the thighs and arms. These are the areas on which the weight of the body rests during sleep and in which the supply of blood and vitamin A is diminished. Other areas involved are those subjected to mechanical pressure; that is, pressure from shoes and clothing. The disappearance of corns and callositics has been so regular that it cannot be ascribed to fortuitous changes in footwear, occupation or other such factors. However, the rate of response is extremely variable. At times, massive desquamation is relatively rapid, but usually the effect is not observed until a lapse of many months to two or three years. Many other agents affecting the peripheral circulation can be readily conceived of as affecting the cutaneous supply of vitamin A. General tests for vitamin A deficiency have value only when they are positive. When the tests are negative they will not exclude the possibility of local sites of vitamin A deficiency.

Oklahoma State Medical Assn. Jour., Oklahoma City

35:277-322 (July) 1942

Military Medicine. R. U. Patterson, Oklahoma City.—p. 277.
Protection of Children Against Tuberculosis. H. L. Dwyer, Kansas City, Mo.—p. 282.
Transfusion Accidents and Isoimmunization (Rh Factor). F. D. Sinclair, Tulsa.—p. 286.
Injection of Varicose Veins. R. Q. Atchley, Tulsa.—p. 288.

Pennsylvania Medical Journal, Harrisburg

45:897-1024 (June) 1942

Surgery in Presence of Pulmonary Tuberculosis. E. S. Welles and B. E. Etsten, Saranac Lake, N. Y.—p. 907.
Pennsylvania Methods and Policies in Venereal Disease Control. J. H. Stokes, Philadelphia.—p. 913.
Contact Dermatitis. L. Hollander, A. Fisher and F. J. Krugh, Pittsburgh.—p. 920.
Preoperative Care of Patient with Gallbladder Disease. D. Macdonald, St. Catherines, Ont., Canada.—p. 927.
Recurrent Biliary Tract Disease Subsequent to Previous Cholecystic Operations. H. L. Foss, Danville.—p. 934.
Cutaneous and Oral Manifestations of Deficiency of Water Soluble Vitamins. T. E. Machella, Philadelphia.—p. 941.
Late Postpartum Complications. G. N. Ballentine, Williamsport.—p. 944.
Pathology and Treatment of Osteoarthritis of Hip, with Special Emphasis on Pin Arthrodesis and Cup Arthroplasty. P. H. Harmon, Sayre.—p. 948.
Bee Venom in Treatment of Chronic Arthritis: Comparative Study. A. Cohen, Philadelphia; A. W. Dubbs, Allentown; J. B. Pearah, Reading, and C. J. Best, Lewisport.—p. 957.
Relation of Hormones to Development of Cancer. W. S. Hastings, Philadelphia.—p. 960.
Feeding the Sick Child. Elizabeth Kirk Rose, Philadelphia.—p. 965.
Differential Diagnosis of Dyspnea. F. J. Gregg, Pittsburgh.—p. 968.

45:1025-1152 (July) 1942

Analysis of Forty-Nine Cases of Acute Anterior Poliomyelitis. G. B. Lemmon Jr., Danville.—p. 1039.
Erythrocyte Sedimentation Test. W. P. Belk and Margaret K. Wilson, Philadelphia.—p. 1045.
Pregnancy Complicating Carcinoma of Breast. H. A. Power, Pittsburgh. —p. 1049.
Treatment of Compound Fractures. C. M. Smyth Jr., Philadelphia.—p. 1051.
Management of Scabies. J. W. Barr and W. F. White, Johnstown.—p. 1055.
Ovarian Cysts Complicating Pregnancy. R. C. Nucci, Pittsburgh.—p. 1059.
Diagnosis and Treatment of the Unconscious Patient. D. R. Murdock, Greensburg.—p. 1066.

Physiological Reviews, Baltimore

22:205-290 (July) 1942

Visual Centers of Brain and Their Connections. W. E. Le Gros Clark, Oxford, England.—p. 205.
Tissue Changes in Vitamin Deficiencies. S. B. Wolbach and O. A. Bessey, Boston.—p. 233.

Public Health Reports, Washington, D. C.

57:959-986 (June 26) 1942

Chronic Deficiency of (1) Calcium, (2) Vitamin C and (3) Both Calcium and Vitamin C in Monkeys. H. F. Fraser.—p. 959.
Mouth Lesions in Monkeys Associated with Chronic Deficiency of (1) Calcium, (2) Vitamin C and (3) Both Calcium and Vitamin C. H. F. Fraser and N. H. Topping.—p. 968.

57:987-1014 (July 3) 1942

Pathology of Artificially Induced Scurvy in Monkey—With and Without Chronic Calcium Deficiency. T. H. Tomlinson Jr.—p. 987.
Epidemic of Acute Respiratory Infection of Unusual Type. J. W. Oliphant and T. R. Dawber.—p. 993.
Current Needs for Health Personnel. G. St. J. Perrott and H. F. Dorn. —p. 997.

57:1015-1046 (July 10) 1942

Study of "Skin Test" with Meningococcus Toxins in Group of Boys. A. P. Hitchens, Sara E. Branham and M. B. Root.—p. 1015.
Studies on Bactericidal and Phagocytic Activity of Normal Human Blood on Meningococci in Relation to "Skin Test" with Meningococcus Toxins. Sara E. Branham, A. P. Hitchens and M. B. Root.—p. 1021.

57:1047-1078 (July 17) 1942

Studies of Sewage Purification: XVI. Determination of Dissolved Oxygen in Activated Sludge-Sewage Mixtures. C. C. Ruchhoft and O. R. Placak.—p. 1047.

Radiology, Syracuse, N. Y.

39:1-126 (July) 1942

Survey of Hodgkin's Disease and Lymphosarcoma in Bone. J. O. Vieta, New York; H. L. Friedell, San Francisco, and L. F. Craver, New York.—p. 1.
Problems in Roentgen Therapy for Hodgkin's Disease and Lymphosarcoma. A. U. Desjardins, Rochester, Minn.—p. 16.
Endothelioma of Pleura: Clinical and Roentgenologic Study of Three Cases. H. P. Doub and H. C. Jones, Detroit.—p. 27.
*Cancer of Lung in Infancy. H. Hauser, Cleveland.—p. 33.
Radium Poisoning. R. H. Stevens, Detroit.—p. 39.
Granulomatous Jejunoileitis. M. L. Sussman and E. Wachtel, New York.—p. 48.
Pseudadenomatous Basal Cell Carcinoma of Tongue (Salivary Gland Tumor). I. Lampe, Ann Arbor, Mich.—p. 54.
Calcified Cystic Tumor of Spleen. G. J. Culver, C. Becker and E. C. Koenig, Buffalo.—p. 62.
Present Status of Roentgen Therapy in Chronic Paranasal Sinusitis. F. E. Butler and I. M. Woolley, Portland, Ore.—p. 69.
*Chronic Leukemia: Statistical Study of Symptoms, Duration of Life and Prognosis. L. M. Pascucci, New York.—p. 75.
Interesting Malpractice Suit. I. S. Trostler, Chicago.—p. 81.
Mucosography of Respiratory Tract. P. L. Farinas, Havana, Cuba. —p. 84.
Calcification of Gallbladder: Roentgenographic and Pathologic Study. M. J. Hubeny, S. M. Marcus and A. B. Ragins, Chicago.—p. 88.
Changes in Central Nervous System of Goldfish Irradiated in Depths of Water Phantom. F. Ellinger and C. Davison, New York.—p. 92.

Cancer of Lung in Infancy.—Only 1 case of primary carcinoma of the lung in infancy was found among more than 14,000 necropsies performed at Cleveland City Hospital in the last twenty-eight years. The patient, an infant of 17 months, Hauser states, had been ill for five months and the true nature of the disease was not suspected. On the basis of a diagnosis of "whooping cough" the child was sent to the contagious ward of a hospital, and bronchopneumonia was diagnosed. If a roentgenogram had been made there might or might not have been enough evidence to suggest the presence of a new growth, for even later, when the lesion was well advanced, the roentgen signs were interpreted as due to pleural fluid. The antemortem clue to the diagnosis came when attempts to aspirate the left pleural cavity proved ineffective. It seems more probable that primary bronchogenic cancer in infancy develops on a congenital basis rather than on an acquired one. Avitaminosis A and influenzal infections may be factors in causing metaplasia of bronchial epithelium with subsequent development of cancer. The logical treatment is early surgical extirpation.

Chronic Leukemia.—Pascucci presents an analysis of 64 patients with myeloid and 64 with lymphatic leukemia given roentgen therapy at the Presbyterian Hospital between 1919 and 1940. The usual supportive measures, the most important of which was transfusion, were employed when indicated. The treatment was in all cases individualized, as the aim was not only to reduce the leukocytes and to shrink the palpable masses but also to maintain the patient in an optimal state of well being and efficiency for as long a period as possible. The average age of the patients with myeloid leukemia was 41.1 years and of those with lymphatic leukemia it was 49.6 years.

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The 64 patients with myeloid leukemia were equally divided between males and females, and of those with the lymphatic type 37 were men and 27 were women. Weakness and loss of weight were about one and a half times as frequent in the patients with myeloid leukemia as in those with lymphatic leukemia. About one third of all the patients complained of fatigue, less than one half of those with myeloid and one fourth of those with lymphatic leukemia presented some symptom related to splenic enlargement, and the first complaint of 63 per cent with lymphatic and 20 per cent of those with myeloid leukemia was enlargement of the superficial nodes. The size of the spleen and the presence or absence of lymphadenopathy are not reliable evidence for differential diagnosis although they do occur frequently. Fever, hemorrhage, retinitis and cutaneous involvement are other signs. According to the initial blood picture the patients with chronic myeloid leukemia when first seen were more seriously ill than those with chronic lymphatic leukemia. A differential diagnosis should not be made purely on clinical grounds without the aid of hematologic studies. The average duration of life from onset of symptoms in chronic myelogenous leukemia was two and a half years, and for chronic lymphogenous leukemia it was two and eight-tenths years. Although remissions were effected whereby the patient's comfort and efficiency were improved, there is no positive evidence that the average duration of life in chronic leukemia was prolonged by roentgen therapy. A short survival period is probable in chronic leukemia if the initial erythrocyte and platelet counts are extremely low. Chronicity, the duration of symptoms before medical aid is sought, has a definite deleterious bearing on survival.

Southern Medical Journal, Birmingham, Ala.

35:713-788 (Aug.) 1942

Studies on Early Recognition of Myocardial Disease by Use of Vibrocardiogram. W. B. Kountz and J. R. Smith, St. Louis.—p. 713.
*Surgical Treatment of Subdermal Myiasis Due to Dermatobia Hominis. W. B. Harrell and V. Moseley.—p. 720.
Renal Counterbalance in Relation to Conservative Renal Surgery. L. M. Orr and P. R. Kundert, Orlando, Fla.—p. 723.
Bronchogenic Carcinoma: Report of Three Cases in Negroes. W. S. Quinland, Nashville, Tenn.—p. 729.
Primary Carcinoma of Fallopian Tube: Case Report. J. E. Hobbs, St. Louis.—p. 733.
Evaluation of Methods of Partial Gastrectomy. R. L. Sanders, Memphis, Tenn.—p. 737.
Pyloroplasty. J. M. T. Finney, Baltimore.—p. 745.
Treatment of Minor Injuries. L. J. Netto, West Palm Beach, Fla.—p. 750.
Lateral Sinus Thrombosis: Recent Developments in Treatment: Summary of Six Cases. J. D. Singleton, Dallas, Texas.—p. 756.
Staphylococcic Infections in Human Body. P. F. Stookey and C. R. Ferris, Kansas City, Mo.—p. 761.
*Staphylococcic Food Poisoning. G. G. Slocum, Washington, D. C.—p. 765.
Treatment of Food Allergy. H. Black, Dallas, Texas.—p. 771.
*Milk Borne Outbreak of Gastroenteritis in Oklahoma City. I. M. Terzich, Lawton, Okla.—p. 773.
Correlated Study Guide for Medical Students. E. L. Wilbur and P. C. Eschweiler, Little Rock, Ark.—p. 780.

Myiasis Due to Warble Fly.—Harrell and Moseley discuss the infection of man and animals by larvae of Dermatobia hominis, or the warble fly, which is common in the tropics and subtropics of the Western Hemisphere. The disease is easily recognized from the patient's history and inspection of the lesion. The history is that of a moderately tender gradually enlarging furuncle-like lesion with sharp neuralgic-like pains accompanied by the sensation of something crawling beneath the skin. The lesion is dome shaped, and its center is pierced by a crater-like orifice from which bubbles arise. At times the spiracle of the larva may be seen to protrude and withdraw through the opening. Often at the periphery a smaller deep mass may be palpated, this being the parasite itself lying in the subdermal tissues. The lesion, in comparison to a true furuncle, is only moderately tender. For successful treatment the larva must be completely removed and the invaded tissue cleansed of its toxic metabolic products and devitalized tissue debrided. The subcutaneous injection of procaine hydrochloride anesthetizes the parasite and renders complete surgical excision less difficult and painless. Suppuration does not follow such treatment. The authors' 2 cases illustrate the difficulties that may be encountered and the depth and vital tissues that the larva may burrow in. In a white soldier with a lesion over his left knee cap and one on the posterior aspect of the right lower leg the parasite had burrowed into the prepatellar bursa and surgical extraction would have been difficult if the parasite had not been anesthetized. Examination of a white soldier with a small lesion in the right groin revealed a small furuncle-like lesion with a central crater overlying the right spermatic cord just above the scrotum. The larva was lying on the spermatic cord just below the external inguinal ring. If anesthetization had not been carried out in each instance, the simple excision might have turned into an extensive surgical exploration of the prepatellar bursa and spermatic cord.

Staphylococcus Food Poisoning.—The symptomatology of staphylococcus food poisoning, Slocum points out, is sufficiently significant to differentiate it from Salmonella food poisoning. The incubation period of staphylococcus food poisoning ranges from one to eight hours, but more often between two and four hours. The onset is usually characterized by abdominal cramps or pain and nausea, followed by vomiting and diarrhea. The acute stage usually lasts six to eight hours. The temperature is usually normal or subnormal. Recovery is rapid once the acute stage is past and, except for weakness, normal activities may be resumed within twenty-four hours. By contrast, food borne Salmonella infection is characterized by an incubation period of six to twenty-four hours; the acute stage is of longer duration and is characterized by fever. Recovery is delayed for several days. The micro-organisms of the Salmonella group appear to be the causative agents in many European outbreaks of food poisoning but are rarely involved in outbreaks in this country. The ubiquity of staphylococci in nature precludes their complete exclusion from food products. Proper refrigeration is an important measure for preventing the production of enterotoxin in contaminated food products, but as mishandling in the home cannot be eliminated the control of staphylococcus food poisoning is practically limited to measures which will curtail an outbreak once it has occurred. Sound sanitary principles in the production of food are effective in eliminating contamination. Outbreaks are usually caused through improper handling of locally produced perishable products and are not within the jurisdiction of the Food, Drug and Cosmetic Act. Little is known about the sources of food poisoning staphylococci, largely because it is difficult to differentiate enterotoxic from non-enterotoxic strains. Knowledge of the source, distribution and conditions required for the production of staphylococcus enterotoxin may lead to some measure which will be of value in controlling this prevalent type of food poisoning.

Milk Borne Outbreak of Gastroenteritis.—Terzich discusses the outbreak of food poisoning that occurred in the southwest and northwest sections of Oklahoma City and bordering communities in July 1941. Investigation concerning the type of foods consumed by the nineteen affected families with 71 cases revealed that the families had partaken of milk purchased from two retail milk outlets of the "gallon jug" variety, which came from the same milk plant. There probably were as many unreported cases. Some member of the affected families had purchased fluid milk at one of the outlets between 5 and 7 p. m. of the evening of July 1. In most instances the milk was consumed with the evening meal; in a few it was held over until the next morning or was used later the same evening. From two to four hours after each individual had partaken of the milk he became violently ill. At approximately 9 o'clock that evening calls for ambulances and requests for immediate medical care started reaching hospitals and physicians. All evidence pointed directly to the milk as the causative factor. In each household where any portion of the milk was still on hand a sample was secured, as were samples from both outlets, and laboratory study revealed it to be highly contaminated. The milk had not been properly pasteurized; hemolytic staphylococci, toxin producing cocci and coli aerogenes were shown to be present. A large amount of neutralizer,

carbonates, had been added to the milk. The plant which supplied the milk employed inadequate pasteurization equipment for the processing of that portion of the milk shipped to Oklahoma City and vicinity. The subsequent contamination of the milk was believed to have been due to an employee with infected cutaneous eruptions on his hands, arms and face who capped the containers by hand.

Surgery, St. Louis

12:1-162 (July) 1942

Effect of Adrenal Cortical Hormones in Hemorrhage and Shock. J. Fine, J. Fischmanr and H. A. Frank, Boston.—p. 1.

*Therapy of Shock in Experimental Animals with Plasma Protein Solutions: I. Concentrated Plasma as Hemodiluting Agent in Shock. E. E. Muirhead, C. T. Ashworth and J. M. Hill, Dallas, Texas.—p. 14.

Modified Technic of Surgical Ligation of Patent Ductus Arteriosus. A. S. W. Touroff, New York.—p. 24.

Ligation of Patent Ductus Arteriosus: Report of Successful Case. J. W. Nixon, San Antonio, Texas.—p. 31.

Anterior Dislocation of Distal Extremity of Ulna: Report of Case. F. J. Cox, New Orleans.—p. 41.

Gross Pathologic Anatomy of Unusual Shoulder Specimens in Two Human Cadavers, with Some Remarks Relative to Surgical Significance of These Findings. T. Horwitz, Philadelphia.—p. 46.

Effect of Sympathectomy on Renal Blood Flow in Essential Hypertension. T. Findley, Etta Clinton and J. C. Edwards, St. Louis.—p. 64.

Thoracoplasty Through Short Lateral and Posterior Incisions. R. H. Wylie, F. B. Berry, New York, and D. W. Waterman, Knoxville, Tenn.—p. 68.

*Shock in Control and Splenectomized Animals Under Ether and Pentobarbital Sodium Anesthesia. D. B. Kendrick Jr. and A. Uihlein, Rochester, Minn.—p. 76.

Some Observations on Rate of Absorption from Various Body Tissues. H. B. Shumacher Jr., Baltimore.—p. 81.

Reconstruction for Traumatic Denudation of Penis and Scrotum: Report of Case. N. Owens, New Orleans.—p. 88.

Elevation of Nasal Bridge Line. D. W. MacCollum, Boston.—p. 97.

Cotton Suture Material and Early Ambulation in Gynecology and Obstetrics. E. W. Nelson and C. G. Collins, New Orleans.—p. 109.

Intrathoracic Esophagojejunostomy for Total Gastrectomy with Lower Esophagectomy for Carcinoma. H. W. Meyer, New York.—p. 115.

Operation for Inguinal Hernia Based on Utilization of Cooper's Ligament. H. Neuhof, New York.—p. 128.

Reconstruction Operation for Large Midline Incisional Hernia. L. V. Rush and H. L. Rush, Meridian, Miss.—p. 133.

Simplified Method for Formation of Artificial Vagina by Split Skin Graft. Report of Case. N. Owens, New Orleans.—p. 139.

Plasma Protein in Shock.—The fact that concentrated plasma is able to increase the blood volume in severe posthemorrhagic and traumatic shock was demonstrated by Muirhead and his associates on 20 dogs in the posthemorrhagic shock group. Sixteen of the animals received concentrated plasma and 4 normal plasma. That concentrated plasma caused hemodilution in each case was reflected by a drop in the specific gravity of the whole blood and a decrease in the erythrocyte count, hemoglobin concentration and hematocrit reading. In several instances hemodilution occurred within five minutes after the injection of the plasma. During the hemodilution the specific gravity of plasma remained about the same, meaning that fluid was withdrawn into the circulation. The elevation in the blood pressure paralleled this hemodilution. Normal plasma produced similar results. The response of several animals was unfavorable; this was characterized by rigor, lack of elevation of the blood pressure or even sudden death. In subsequent experiments on normal unanesthetized animals it was observed that ill effects followed rapid intravenous injection of concentrated plasma and that the small quantity of soluble pentobarbital (given donor dogs) in the plasma was also a factor. As a final check, dog plasma containing citrate-soluble pentobarbital was dialyzed at low temperature against isotonic solution of sodium chloride. After sufficient dialysis the plasma did not produce ill effects.

Shock in Animals Under Anesthesia.—Kendrick and Uihlein performed experiments on dogs with ether and pentobarbital anesthesia. Their results indicate that as little as 10 mg. of soluble pentobarbital per kilogram of body weight was effective in delaying the decline of the blood pressure to a shock level even though intestinal manipulation and ether anesthesia had caused a concentration of hemoglobin indicative of impending shock. It was again demonstrated that the spleen is an important factor in causing an apparent hemodilution following the injection of soluble pentobarbital. The blood pressure was more rapidly reduced to a shock level in the splenectomized than in the nonsplenectomized dogs. The reservoir function of the spleen was probably its chief contribution. In the absence of the spleen the injection of soluble pentobarbital delayed the decline of blood pressure to a shock level. The effective mechanism of the soluble pentobarbital is not known. The animals in which shock was delayed the longest were those given the smallest doses of soluble pentobarbital.

Texas State Journal of Medicine, Fort Worth

38:185-244 (July) 1942

Medical Aspects of Selective Service. L. G. Rowntree, Washington, D. C.—p. 191.

Problems of Military Importance in Preparation and Use of Desiccated Plasma or Serum. J. M. Hill and E. E. Muirhead, Dallas.—p. 195.

*Rationale of Use of Concentrated Plasma Protein Solutions in Treatment of Hematogenic Shock. E. E. Muirhead, J. M. Hill and C. T. Ashworth, Dallas.—p. 199.

Wartime Use of Plasma. W. D. Tigertt, Fort Sam Houston.—p. 207.

Comparison of Basal and Nitrogen Metabolism. M. M. Minter, San Antonio.—p. 211.

Venereal Disease Problems in Mobilization. J. H. Musser, New Orleans. —p. 214.

*Clinical Evaluation of Heart Murmurs in Examination of Candidates for Naval Aviation. W. G. Mitchell, Corpus Christi.—p. 217.

Debunking the Rale as Diagnostic Sign. S. E. Thompson and M. Herman, Kerrville.—p. 219.

Newer Conceptions of Mechanism of Heart Failure. J. T. Roberts, Galveston.—p. 221.

Erysipeloid: Report of Case. E. B. Ritchie, Galveston.—p. 226.

Relationship of Medical Profession to Public Health in War. A. C. Scott, Temple.—p. 228.

Concentrated Plasma Protein Solutions for Hematogenic Shock.—Muirhead and his co-workers discuss the type of shock in which there is a decrease in the effective circulating blood volume due to an actual depletion of the blood volume itself brought about by loss of whole blood, loss of plasma fluid into the tissues through damaged capillaries or by both factors. Blalock has termed this hematogenic shock. The cause of the shock can be frequently differentiated on the basis of the preceding events and the physical signs presented by the patient. The proper use of fluid therapy intravenously requires an understanding of the distribution of fluid in the body and a knowledge of the abnormal changes occurring during hematogenic shock. The fluids in the body are cellular, interstitial and circulating. In spite of complications in shock the deficient blood volume must be adequately and rapidly replenished if shock and complications are to be overcome. The solution best capable of accomplishing this should at least increase the blood volume rapidly, encourage a greater cardiac output and peripheral volume flow, be retained in the vascular system, reverse abnormal physiologic mechanisms, be accessible, be easy to handle and to administer rapidly and should have no harmful post-transfusion consequences. When concentrated protein solutions are used, new vigor seems to be added to fluid therapy. Concentrated protein therapy is the same whether concentrated plasma, concentrated serum or concentrated albumin solutions are used. The rationale for all these solutions is that by the increased osmotic properties such solutions encourage the entrance of fluid into the blood stream in the early phases. Later, when fluid appears to shift into cells, the concentrated solution tends to reverse this shift. Experimental evidence suggests that cellular water is available for the increase of plasma volume in normal animals when concentrated serum is injected intravenously. Problems concerned with the therapeutic effectiveness of concentrated solution, the possibility of reactions and the possibility of harmful dehydration must be completely answered before this type of therapy is generally accepted. Harmful dehydration following concentrated plasma therapy has been overemphasized in the past. Treatment in the early phases of the oligemia is urged.

Significance of Heart Murmurs in Candidates for Naval Aviation.—Of 100 naval aviation candidates referred for an opinion as to their cardiac status because of heart murmurs, Mitchell considered the condition in 80 to be functional. Of the 20 with an organic disorder 2 had definite mitral stenosis, 2 hypertension and 1 complete heart block. If these were eliminated from the material studied the percentage of func-

tional cases would be still higher. The 80 subjects were passed for flight training. Ordinarily heart murmurs are not difficult to gage if organic states are ruled out first. If the murmur is systolic in time, not loud or harsh, is heard only in certain positions, if it is superficial and related to respiration or if it is absent when the breath is held, it is typically functional. The greatest danger of mistake at examination is caused by beginning with auscultation of the heart and ignoring other considerations. A café au lait complexion, distention of veins in the neck, abnormal pulsations, displacement of the cardiac apex beyond the nipple line, precordial heaving or prominence are all significant signs to be noticed by inspection. Inspection is still the most effective means of diagnosis.

War Medicine, Chicago

2:543-682 (July) 1942

Military Psychiatry. W. C. Porter, Washington, D. C.—p. 543.
Neuroses in Soldiers: Therapeutic Barriers. L. L. Altman, with the technical assistance of L. Pillersdorf and A. T. Ross, Fort Benjamin Harrison, Ind.—p. 551.
Influence of War on Industrial Medicine. J. J. Bloomfield, Bethesda, Md.—p. 561.
Treatment of Traumatic Perforation of Ear Drum. S. Zurik, New York. —p. 571.
Opportunities for Women in War Medicine. R. R. Spencer, Bethesda, Md.—p. 574.
Aerial Transportation of Patients, with Special Reference to Traumatic Pneumothorax, Diaphragmatic Hernia and Mediastinal Emphysema. W. R. Lovelace II and H. C. Hinshaw, Rochester, Minn.—p. 580.
Mechanical Analysis of Survival in Falls from Heights of Fifty to One Hundred and Fifty Feet. H. De Haven, New York.—p. 586.
Traumatic Separation of Symphysis Pubis Without Fracture: Report of Case. M. X. Andersen, March Field, Calif.—p. 597.
Easily Transportable Apparatus for Anesthesia With or Without Compressed Oxygen, Especially Designed for Positive Pressure Anesthesia in Thoracic Surgery Under Military Conditions. H. K. Beecher, Boston.—p. 602.
New Type of Medical Chest for Field or Mobile Unit. A. S. Friedlaender, Fort Sheridan, Ill., and S. Friedlaender, Camp Forrest, Tenn.—p. 609.
Atypical Pneumonia in an Army Camp. G. B. Moore Jr., A. J. Tannenbaum and T. G. Smaha, Camp Claiborne, La.—p. 615.
Comparison of Course and Direction of Fatal and Nonfatal Gunshot Wounds of Chest. H. G. Hardt Jr. and L. Seed, Chicago.—p. 623.
*Growth of Fibroblasts in Serum Containing Sulfathiazole. G. B. Reed, J. H. Orr and Reta Anderson, Kingston, Ont., Canada.—p. 635.
*Phagocytosis by Leukocytes in Concentrated Solutions of Sulfanilamide and Four Derivatives. G. B. Reed and J. H. Orr, Kingston, Ont., Canada.—p. 639.

Growth of Fibroblasts in Serum Containing Sulfathiazole.—Experiments determining the direct influence on leukocytes and fibroblasts of sulfathiazole in concentrations likely to be encountered in locally treated wounds were carried out by Reed and his co-workers. Their results and those of other investigators suggest that, during the time when the exudate of the wound is saturated with the drug, fibroblasts will not grow into the lumen of the wound. In the tissues in close proximity to the actual opening of the wound the concentration of sulfathiazole will at all times permit normal growth of the fibroblasts. As the concentration of the drug in the opening of the wound falls by absorption to slightly below 100 mg. per hundred cubic centimeters, a normal growth of the fibroblasts may be expected throughout the entire area of the wound.

Phagocytosis by Leukocytes.—Reed and Orr determined what in vivo and in vitro influence sulfonamide derivatives used locally in the treatment of wounds in mice had on phagocytosis by leukocytes. Phagocytosis was determined essentially with the technic devised by Welch and Hunter for determining the toxicity of antiseptics. In vitro concentrations of 8 mg. and 80 mg. per hundred cubic centimeters of five compounds did not have a significant influence on phagocytosis. On the other hand, supersaturation slightly reduced phagocytosis; this was evinced by the reduction in the leukocytes which take up bacteria and in the bacteria phagocytosed by the leukocytes. As phagocytosis provides a measure of cell activity, leukocytes are evidently not seriously injured by the high concentrations. There was no evidence to suggest that the compounds used stimulate phagocytosis. For the in vivo experiments white mice were given 10 mg. of sulfanilamide or sulfapyridine intraperitoneally and then 0.5 cc. of a twenty-four hour broth culture of Clostridium perfringens. Control mice not given either drug were similarly inoculated. After fifteen minutes, two hours, four hours and six hours the amount of phagocytosis was determined in fifty random fields. The rate of phagocytosis was highest both in untreated controls and in the treated animals at two hours. At four and six hours the rate of phagocytosis was lower. This was probably due to presence of fewer bacteria to be phagocytosed. However, of most importance is the fact that during the six hours more phagocytosis occurred in mice given sulfanilamide or sulfapyridine than in the control animals. Two groups of guinea pigs were examined for phagocytosis by leukocytes, one after being inoculated with Cl. welchi and treated locally in the experimental wounds of the thigh with 0.15 Gm. of sulfathiazole four hours after inoculation and inoculated with Clostridium sordelli and similarly treated. The number of bacteria in the untreated wounds increased in contrast to the stationary or decreasing numbers in the treated wounds. The proportion of leukocytes in the exudates of treated wounds which showed phagocytosed bacteria was definitely higher than in control wounds, notwithstanding the fact that less bacteria were available for phagocytosis in the treated than in the untreated wounds.

Yale Journal of Biology and Medicine, New Haven

14:567-682 (July) 1942

*Apparently Undescribed Infectious Exanthem. F. G. Blake, L. G. Welt and B. Craige Jr., New Haven, Conn.—p. 573.
Electric Correlates of Growth in Corn Roots. H. S. Burr, New Haven, Conn.—p. 581.
Mechanism of Secretion of Sulfonamide Drugs in Gastric Juice. H. W. Davenport, Philadelphia.—p. 589.
Possible Role of Ionization in Bacteriostatic Action of Sulfonamides. P. B. Cowles, New Haven, Conn.—p. 599.
Changing Concepts of Antisterility Vitamin (Vitamin E). K. E. Mason, Rochester, N. Y.—p. 605.
Interstitial Cell Stimulation and Luteinization Under Influence of Male and Female Hypophyses. C. A. Pfeiffer, New Haven, Conn.—p. 619.
Inhibition of Painful Breast Engorgement in Puerperium with Stilbestrol. M. L. Berlowe, New Haven, Conn.—p. 631.
History of Refractory Period: Neglected Contribution of Felice Fontana. H. E. Hoff, New Haven, Conn.—p. 635.
Industrial Medical Services for Small Industries. L. G. Welt, New Haven, Conn.—p. 673.

Undescribed Infectious Exanthem.—During the last five years Blake and his associates encountered 11 patients with an unidentified acute febrile illness. There were 3 in a family of 5 members. The disease is characterized by fever, no prostration, malaise, a red brown maculopapular cutaneous eruption, varying degrees of general lymphadenopathy, splenomegaly and leukopenia with relative lymphocytosis but without any consistent pathologic cytology. It occurred predominantly in the spring and fall. Only 2 were children. The 3 patients in the one family had intimate contact with goats but the other 2 members did not. In the other cases no animal exposure was found. No definite conclusions could be reached regarding the incubation period or a possible animal vector. The period of invasion, calculated from the day of symptoms to the appearance of the rash, varied from two to fourteen days with an average of about six days. The major symptoms during this period were fatigue and general malaise, generalized aches and pains, fever, chilly sensations or a shaking chill, headache, anorexia, occasional nausea and vomiting, and sometimes a mild sore throat, conjunctivitis, photophobia and painful motion of the eyes. The only specific observation about this stage of the disease was the absence of prostration. The clinical course was invariably benign with prompt, uneventful, recovery; there were no complications. There was a moderate loss of weight in 2 and mild fatigue that lasted for a week or more following recovery. Leukopenia or a low normal leukocyte cell count was always seen, and in the latter part of the disease a relative lymphocytosis usually occurred. The leukopenia was usually replaced by a return to a normal total count but never by a leukocytosis. The blood smear was never particularly abnormal, although the lymphocytes were occasionally referred to as large and young. Anemia was not present, and the urine was not abnormal beyond an occasional febrile albuminuria. Agglutinations against Eberthella typhosa and paratyphosa A and B, Brucella, Proteus X 19 and sheep cells were uniformly negative. Blood, stool, urine and throat cultures were negative. The Kahn test was negative. In the differential diagnosis typhoid, infectious mononucleosis, influenza, brucellosis and Rocky Mountain spotted fever must be considered.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

26:289-336 (July) 1942

Collected Works of C. H. Usher: Contribution to Human Genetics, Mainly Ophthalmic and to Its Bibliography. W. C. Souter.—p. 289.
Lymphoma of Orbit: Report of Case. M. L. Hine.—p. 297.
Scleroderatitis Following Phosphorus Injury of Eye. T. K. Lyle and A. G. Cross.—p. 301.
Orthoptic Interest: Two Cases. E. B. Alabaster, C. Rudd and M. Tree.—p. 304.
Use of Sulfapyridine in Postoperative Ocular Sepsis. A. M. MacGillivray.—p. 309.
Hospital Lighting for Protection in Wartime. C. E. Ferree and G. Rand. —p. 310.
Melanotic Sarcoma of Conjunctiva: Case. H. Tonkin.—p. 314.
Some Observations on Surgical Treatment of Concomitant Strabismus. H. P. Folger.—p. 318.

British Journal of Surgery, Bristol

29:365-452 (April) 1942

Caisson Disease (Compressed Air Illness) of Bone: Report of Case. V. A. J. Swain.—p. 365.
Tumors of Ureter. T. Moore.—p. 371.
Histologic Condition of Nerve Autograft in Man. H. J. Seddon, J. Z. Young and W. Holmes.—p. 378.
Traumatic Perforation of Intestine as Complication of Inguinal Hernia. J. Bruce.—p. 385.
*Glomus Tumor. Constance M. Ottley.—p. 387.
Primary Carcinoma of Ureter: Case. E. W. Riches.—p. 392.
*Proliferative and Other Lesions of Male Breast: Notes on Two Cases of Proliferative Mastitis in Stilbestrol Workers. R. W. Scarff and C. P. Smith.—p. 393.
Operation for Increasing Range of Independent Extension of Ring Finger for Pianists. C. G. Batty-Smith.—p. 397.
Mucoid Adenocarcinoma of Urinary Bladder. H. Spencer.—p. 400.
Fractures of Olecranon Process. D. Wainwright.—p. 403.
Semilunar Cartilages. T. P. McMurray.—p. 407.
Treatment of Cardiospasm by Heller Type of Operation, with Special Reference to Choice of Operation, Its Indications and Technic: Report on Three Personal Cases. D. Barlow.—p. 415.
Observations on Choledochoduodenal Mechanism and Their Bearing on Physiology and Pathology of Biliary Tract. H. Long.—p. 422.

Glomus Tumor.—Ottley reports the occurrence of a glomus tumor in an uncommon site, the neck. The patient, a man aged 38, stated that ten or twelve years before he had a boil on the back of his neck, which was incised. Ever since he had noticed a small swelling at the site of the incision, which slowly increased and was always acutely sensitive to touch; its mere contact with the collar provoked severe pain shooting up the back of the head. On palpation a slightly raised, blue, cystic globule looking like a small whortleberry embedded in the skin was found to be the superficial part of a considerably larger firm, rounded tumor lying in the subcutaneous tissue. A diagnosis of glomus tumor was made, and the mass was shelled out from the subcutaneous fat and removed with the attached ellipse of skin.

Lesions of Male Breast.—Scarff and Smith record the incidence and microscopic picture of the various types of lesion in the male breast for which mastectomy has been performed. Their material consists of 65 specimens from partial or total mastectomy in the male. Two of them are of particular interest in that they were from workers in diethylstilbestrol, in each of whom hypertrophy of one breast has occurred. There were 15 carcinomas arising in the gland tissue of the breast, 3 sarcomas, 1 rodent ulcer of the nipple, 4 fibroadenomas, 1 lipoma and 41 of chronic mastitis. From this and studies of 2,845 mastectomies on women it is revealed that chronic mastitis occurred in the male twice as often as cancer; the reverse proportions obtained in women, but a degree of epithelial proliferation sufficiently advanced to suggest cancer occurred in cases of chronic mastitis in men only half as frequently as in women. Only 3 breast sections examined and classed under chronic mastitis showed a "dangerous" degree of epithelial proliferation, and 2 of them were from the 2 diethylstilbestrol workers, who had been handling it or its precursors for twelve and ten weeks, respectively. Tenderness and enlargement of the breasts was noticed three to four weeks after this work was started and it lasted until it was discontinued, when the symptoms gradually subsided. Biopsies, performed three to five weeks after the patients had ceased handling the estrogen, revealed a definite degree of epithelial overgrowth in the acini and ducts with, in places, solid acinar formation, but no definite invasion of interstitial tissue by epithelial cells. The only other reference in the literature on the effect of estrogen on the human male breast is that of Dunn, who reports gynecomastia following therapy with diethylstilbestrol.

Lancet, London

1:725-754 (June 20) 1942

Treatment of Recent War Wounds: French and Spanish Methods. H. Fruchaud.—p. 725.
*Differential Diagnosis of Dyspepsia: Analysis of 217 Service Cases. A. M. Gill, F. R. Berridge and R. A. Jones.—p. 727.
In Vitro Tests of Penicillin Potency. A. Fleming.—p. 732.
Training in Military Hygiene. E. B. Allnutt.—p. 733.

Differential Diagnosis of Dyspepsia.—According to Gill and his colleagues, the conflicting reports of investigation on service cases of dyspepsia depend on differences in the age groups from which the men are drawn and on the varying standards of diagnostic criteria. For an accurate investigation of dyspepsia, gastroscopy and the mucosal pattern technic of roentgenography are necessary. Investigation at special centers is advantageous. The repeated examination of service men with dyspepsia is detrimental to them and fosters the latent neurotic element; it is also uneconomical. Outpatient investigation, being incomplete, is valueless if it proves negative, as the patients drift from hospital to hospital, where contradictory conclusions are often reached because diagnostic standards vary. The formation of special centers for the investigation of men with dyspepsia would solve this problem. Of 217 service patients with dyspepsia admitted to a hospital within three months under comparable conditions only 28.5 per cent showed peptic ulceration, whereas 47.5 per cent had gastroduodenitis; in 16.5 per cent no organic lesion was found.

Medical Journal of Australia, Sydney

1:569-590 (May 16) 1942

Insensible Perspiration and Its Clinical Significance. A. Lippmann.—p. 569.
Military Medical Emergencies. S. F. McDonald.—p. 576.
Clinical Diagnoses Contrasted with Postmortem Findings. J. B. Cleland. —p. 579.

1:591-610 (May 23) 1942

Technic of Perineal Excision of Prostatic Urethral Adenoma with End to End Anastomosis. M. G. Sutton.—p. 591.
Granulosa Cell Carcinoma of Ovary: Report of Case. R. Mackey.—p. 596.
Measurement of Drying Capacity of Wind. C. E. Corlette.—p. 597.

Practitioner, London

149:1-64 (April) 1942

Early Diagnosis and Treatment of Senile Mental Disorders. D. K. Henderson.—p. 1.
Syphilis of Nervous System. W. D. Nicol.—p. 7.
Schizophrenia: Early Diagnosis and Treatment. R. A. Noble.—p. 14.
Indications for Admission to Mental Hospital. T. Tennent.—p. 22.
Minor Degrees of Mental Defect. D. R. MacCalman.—p. 27.
Hydration and Dehydration in Health and Disease. S. W. Smith.—p. 34.
Endoscopic Resection of Prostate. W. E. M. Wardill.—p. 45.
Minor Surgery: XII. Treatment of Minor Wounds. C. P. G. Wakeley. —p. 50.

Quarterly Journal of Medicine, Oxford

11:77-120 (July) 1942

Azotemia in Gastroduodenal Hemorrhage: Critical Review. D. A. K. Black.—p. 77.
Chronic Peptic Ulcer of Esophagus and Its Association with Congenitally Short Esophagus and Diaphragmatic Hernia. R. C. S. Dick and A. Hurst.—p. 103.

South African Medical Journal, Cape Town

16:173-196 (May 9) 1942

Preliminary Estimate of Cost of Institutional Medical Services in South Africa. R. J. Randall.—p. 177.
Triple Dye Treatment of Burns and Scalds. A. E. Dreosti.—p. 181.
Mistaken Injection of Pentothal Sodium into Aberrant Ulnar Artery: Case. C. W. H. van der Post.—p. 182.
Plasmodium Ovale Infection: Case. Maria L. du Toit.—p. 182.

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Revista Médica de Chile, Santiago

70:331-396 (May) 1942. **Partial Index**

*Healthy Carriers of Salmonella and Shigella: Epidemiologic and Clinical Importance. H. Vaccaro, M. Perez and L. Paredes.—p. 331.
Treatment of Hydatid Pulmonary Cysts with Preoperative Pneumothorax (Method of Arce). R. Benavente Garces.—p. 344.
Renal Insufficiency Resulting from Lesion Caused by Compression. J. E. Morison.—p. 363.
Syndrome of Loeffler. M. Acuña Zamora and G. Fluhmann.—p. 368.
Chronic Gouty Rheumatism. P. Garcia Palazuelos and M. Kaffman M. —p. 371.

Salmonella and Shigella Carriers.—Vaccaro and his associates attempted to determine the percentage of healthy carriers of salmonella and shigella organisms by cultures of feces from 600 healthy subjects without a previous history of typhoid, dysentery or alimentary intoxications. The specimens were obtained by sterile swabs. The various cultures were made immediately so as to avoid the death of the organisms. The culture mediums used were those especially suited for the isolation of the salmonella and shigella organisms. One of them was MacConkey's bile salt agar, while the other two mediums also contained bile salts. The presence of bile salts inhibits the growth of coliform bacilli and at the same time facilitates the metabolism of the salmonella and shigella organisms. The incidence of healthy carriers amounted to 3.83 per cent; 8 subjects (1.33 per cent) had shigella organisms and 15 (2.5 per cent had organisms of the salmonella type. Of 120 adults examined not one carried the organisms; of 162 children between 6 months and 3 years of age 6 were carriers, and of 318 children between 3 and 12 years of age 17 were carriers. It is of considerable epidemiologic interest that children between the ages of 3 and 12 years constitute the highest percentage of carriers, because habits at this period of life tend to promote dissemination of pathogenic organisms and epidemics. Serum of healthy carriers did not possess agglutinins for the isolated organisms. The serologic test will probably be useful in differentiating healthy carriers from chronic carriers, because the latter often contain specific agglutinins.

Klinische Wochenschrift, Berlin

20:281-304 (March 22) 1941. **Partial Index**

*Sternal Puncture as Diagnostic Aid in Abdominal Typhoid. K. Sprenger. —p. 284.
Presence of Vitamin C in Human Feces. H. Martin.—p. 287.
Investigations on Enteral Degeneration of Colon Bacilli. T. Bäumgärtel.—p. 289.
Influence of "Acetylcholine" on Bone Marrow. S. Okinaka, I. Asai and S. Ino.—p. 292.
*Registration of Movements with Photoelectric Reflex Meter: Methods for Registration of Venous Pulse and of Pupillary Reflexes. K. Matthes.—p. 295.

Sternal Puncture in Diagnosis of Typhoid.—Sprenger directs attention to the comparatively high incidence of typhoid in the Polish provinces, stating that in the course of eight months 41 cases were treated at his hospital. Bacteriologic examinations of the blood and excreta and the Gruber-Widal reaction were employed to verify the diagnosis. It was found that in 12 per cent of the cases the titer of the Gruber-Widal reaction was below the level that can be used for the diagnosis. Even higher values deserve cautious estimation when it is a question of the diagnosis. For this reason a bacteriologic verification of the diagnosis must be aimed at in all cases. Blood culture and examination of the feces accomplished this in only 46 per cent of the cases. Since other investigators had obtained favorable results with sternal puncture, the author resorted to this procedure in 16 cases. The culture of the sternal punctate was positive in 12 cases (75 per cent). In 3 instances the diagnosis was verified exclusively by the sternal punctate, because blood and excreta remained constantly negative. In 1 case the sternal culture was the first positive bacteriologic result. In 7 cases several sternal punctures were made and blood cultures were set up simultaneously. The sternal and blood cultures did not exhibit uniform behavior, so that dependence of the sternal culture on the blood culture can be excluded. The author concludes that sternal puncture makes possible the bacteriologic verification of typhoid in a much higher percentage of cases than is possible by blood culture and examination of the excreta. Since sternal puncture involves no danger and almost no pain it should be used in the diagnosis of typhoid just as regularly as blood culture and bacteriologic examination of the excreta.

Registration of Venous Pulse and Pupillary Reflexes with Photoelectric Meter.—Matthes shows that with the aid of the prismatic optic of a reflexless electric ophthalmoscope a moving point can be illuminated. It reflects the light to a photoelectric cell behind the prism. The movements of the illuminated point can thus be registered as intensity changes of the photo current. Pulsations of the skin, for instance of the jugular vein, can thus be registered in a simple manner. By using ultrared, invisible light, it is possible to register with this method the pupillary reflexes of the human eye. The latent period of the pupillary reflex can be measured exactly and different types of light reactions of the pupils can be recorded.

Acta Dermato-Venereologica, Stockholm

22:499-588 (Dec.) 1941

Treatment of Gonorrhea with Sulfathiazole. H. Haxthausen.—p. 499.
*Benign Lymphogranulomatosis (Schaumann): Two Cases. M. Dressler and H. Wagner.—p. 511.
Experiences with 2-Sulfanilylaminopyridine in Gonorrhea. T. E. Olin. —p. 545.
Tertiary Syphilis with Unusual Roentgenologic Lung Changes: Case. T. Romanus.—p. 563.

Benign Lymphogranulomatosis (Schaumann).—Dressler and Wagner direct attention to the systemic entity which Schaumann in 1914 designated as benign lymphogranulomatosis, pointing out that the cutaneous manifestations of this disorder had been known as lupus pernio (Besnier) or as Boeck's sarcoids, but that these lesions are only occasionally present. The authors have given particular attention to the pulmonary manifestations and come to the conclusion that these, together with the general aspects and the course, often permit the diagnosis, although the final proof, the demonstration of the histologic structure, may still be lacking. They have been able to collect 65 cases, some of which were referred to them with the diagnosis Boeck's sarcoid or lupus pernio, and others were sent to them by the ophthalmologic clinic for internal examination. In some of the latter cases it was discovered that the eye disorder was a manifestation of benign lymphogranulomatosis. The authors review 2 cases which are of particular interest not only from the internistic but also from the ophthalmologic point of view. In the first case, lungs, eyes, lymph nodes, salivary glands, bones, tonsils and spleen were affected, probably also liver, kidneys and nerves (a paralysis of the nervus facialis may have been toxic). The authors do not know whether an otitis media was accidental or a manifestation of benign lymphogranulomatosis. The diagnosis of benign lymphogranulomatosis could be certified by the characteristic microscopic alterations found in two excised lymph nodes and the tonsils. The examination of the eyes showed a keratitis superficialis and severe iridocyclitis or uveitis, which was partly proliferative, partly exudative. Hemorrhages into the corpus vitreum occurred repeatedly. These were caused by chorioretinitis or periphlebitis retinae and finally disappeared. There remained opaque bands on the cornea, posterior synechias, cataracta complicata, patches of choroiditis and retinitis proliferans. The second case was a typical one of uveoparotitis. The characteristic findings of the hilus lymph nodes, the spleen and the liver were typical for benign lymphogranulomatosis. The authors found patches of choroiditis and periphlebitis and believe that they were the first to observe periphlebitis retinae in cases of benign lymphogranulomatosis. In an addendum to this report they say that after six years the general condition of the first patient is excellent. The swellings at the pulmonary hilus have disappeared, but the miliary dissemination has again increased. The ophthalmologic disorder is stationary. The spleen became again palpable and extended 2 fingerbreadths beyond the costal arch. The formerly resistant swellings of the cervical and of the submandibular glands showed a surprising regression during the nine months that followed the tonsillectomy. This regression was a distinct surprise, because sclerotization was suspected in view of their existence for several years.

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Book Notices

Influenza: A Survey of the Last 50 Years in the Light of Modern Work on the Virus of Epidemic Influenza. By F. M. Burnet and Ellen Clark. Monographs from the Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne, Number Four. Paper. Pp. 118, with 20 illustrations. Melbourne & London: Macmillan and Company, Ltd., 1942.

From Australia comes this review of information regarding influenza accumulated during the last fifty years. The monograph is supplemented by a good bibliography, well selected to cover the important available literature. The book is also up to date in recognizing the recent research of Horsfall and Lennette. The authors recognize the possibility that living virus used in inoculation against influenza might actually reach the lung and set up the specific disease. The section on bacterial and virus vaccines states in a brief paragraph the basis of the use of virus products. It says "It is clearly unjustified, however, to try out a method, however convenient its practical application, unless preliminary work shows (1) that it has a high probability of proving effective and (2) that the risk involved in its application is small enough relative to that presented by the pandemic to allow public opinion to accept the procedure. Neither of these probabilities can ever be properly evaluated except as a result of actual pandemic experience, but something can probably be learned from tests on volunteers without necessarily exposing them to natural infection." The authors believe that it is technically possible to prepare virus of any grade of human virulence less than that of the initial material and to use the amniotic method for the preparation of quantities of any of such graded virus strains. The practical problem, therefore, becomes one of finding which, if any, of the infinite number of possible strains has the required characteristics. It is the belief of the authors that the dangers involved in using such inoculations are infinitesimal compared with the kind of devastating epidemic of influenza that swept the world in 1918. Indeed, they feel that the provocation of an epidemic of mild, spontaneously spreading outbreaks of influenza from inoculated subjects would probably be more beneficial than otherwise in extending the proportion of protected individuals. The book also outlines a program from clinical research leading to prevention of the next possible epidemic.

Sex Education in High Schools. By John Newton Baker, Assistant Professor of Sociology, Virginia Polytechnic Institute, Blacksburg. Introduction by William E. Cole, Head of Department of Sociology, University of Tennessee, Knoxville. Cloth. Price, $2. Pp. 135. New York: Emerson Books, Inc., 1942.

Marriage. By Ernest R. Groves, Professor of Sociology, University of North Carolina, Chapel Hill. Revised edition. Cloth. Price, $3.50. Pp. 671. New York: Henry Holt & Company, 1941.

Marriage and Family Life. By Gladys Hoagland Groves, Director, Marriage and Family Council, Inc., Chapel Hill, N. C. Cloth. Price, $2.50. Pp. 526. New York: Reynal & Hitchcock, 1942.

Sex Fulfillment in Marriage. By Ernest R. Groves, Professor of Sociology, University of North Carolina, Chapel Hill, Gladys Hoagland Groves and Catherine Groves. Introduction by Robert A. Ross, M.D., Associate Professor of Obstetrics and Gynecology, Duke University School of Medicine, Durham. Cloth. Price, $3. Pp. 319, with 5 illustrations by Robert L. Dickinson, M.D. New York: Emerson Books, Inc., 1942.

Sex Guidance in Family Life Education: A Handbook for the Schools. By Frances Bruce Strain. Cloth. Price, $2.25. Pp. 340. New York: Macmillan Company, 1942.

The psychologists, sociologists, economists and physicians have recognized the large part played by sex and our attitudes toward it in modern life. The concealment of previous generations has given place to a point of view which demands education early in life as to reasonable attitudes. The early entrance of women into public work and industry, the programs for planned parenthood, the emphasis on sex in books, plays and motion pictures all tend to focus more and more attention on these problems. Recently one leading metropolitan newspaper found it necessary to conduct a campaign because of increasing instances of attacks on women. One eminent educator has pointed out that sex is the subject above all others about which we are most keen to learn and about which we wish most to know but that it is the one subject on which children have less opportunity of learning from safe and truthful sources. Surveys made among high school boys and girls indicated abysmal ignorance of some of the most simple biologic facts.

In a sociological research Professor Baker discovered that educators in twenty-seven states considered that sex education should be primarily a function of the home and not of the school. There were only ten states in which there is any encouragement for sex education in the schools. Opposition to such education comes from various agencies including parental opposition, usually resulting from ignorance or misinformation, and in about 5 per cent of instances from religious groups. As in many other fields of education, there is no scientifically conducted research on sex education which could guide instructors as to technics. Other questions concern segregation of the sexes for purposes of sex education and the content of courses on this subject. As a supplement to his book Professor Baker submits outlines of courses now available in various schools and a modern bibliography of the subject.

Among the leaders in the field of sex education have been Ernest R. Groves, professor of sociology in the University of North Carolina, and Mrs. Gladys Hoagland Groves, who has been associated with him in some of his work. More recently there is Catherine Groves, their daughter, who has acted as a marriage counselor and who is now executive secretary of the family Service Association of Durham, N. C.

The book on "Marriage," first published in 1933, is now offered in a revised edition. It approaches the subject from the sociological point of view, discussing every aspect of the marriage problem and concerning itself as well with many biologic, physiologic and pathologic aspects of the subject. Especially modern in this book is the discussion of childbirth and contraception. Instruction in marriage at the University of North Carolina, in which this book is utilized as a textbook, is now given in seven sections—five for men, one for women and one for men and women together.

The book on "Marriage and Family Life" by Gladys Hoagland Groves is designed not so much as a textbook in the field as it is a book of advice to married couples. Obviously marriage is the basis of the family, so that a large portion of the book is devoted to proper adjustments in family life. Next come questions related to courtship. Thereafter come chapters on the choice of a mate, personal adjustment during the engagement, family finances and the role of the husband and wife in modern marriage. Throughout the book are references to numerous cases in which the author has acted as a marriage counselor. These teach their lessons in an exceedingly interesting form.

In the book called "Sex Fulfillment in Marriage" the members of the Groves family have cooperated, this book emphasizing sex more than either of the other two contributions. In this book also the authors have drawn freely on other work in the field of marriage counseling. They are convinced that sex instruction of children would avoid many of the serious difficulties which have come to them from adults who have been unable to make adequate sex adjustments. The impressions of adolescent life are frequently carried over to adult years and yield avoidable unhappiness. The book follows the usual outline of beginning with childhood problems and carrying the reader through courtship, the beginning of marriage, the sex role of the husband and wife, common marital problems, sex hygiene, birth control, pregnancy and the philosophy of sex. The scientific and yet easily readable approach to this subject makes this a volume that can be widely recommended in its field.

The volume by Frances Bruce Strain is subtitled "A Handbook for the Schools." This book is offered to teachers, personnel workers, counselors and others in the schools to aid them in their approach to the subject. It therefore carries the reader through school experience, family relationships, technic in sex teaching and the development of counseling centers. The chapter on technic in sex teaching is a reflection of actual experiences. Especially important in this chapter is the discussion of the words used in speaking of physiologic and anatomic matters. This chapter is exceedingly practical and should certainly be useful to the newcomer in matters of instruction in the lower grades of school. The bibliography is suggestive of interesting material but hardly complete enough or detailed enough to be most useful.

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Acoustically Handicapped Children. The Committee for the Study of the Care and Education of Physically Handicapped Children in the Public Schools of the City of New York. Report of the Sub-Committee on Acoustically Handicapped Children. Paper. Pp. 109, with 2 illustrations. New York: Board of Education, 1941.

This report of a subcommittee of the Committee for the Study of the Care and Education of Physically Handicapped Children in the Public Schools of New York City has been compiled by a representative group of doctors, social workers and educators. Dr. E. P. Fowler has written a comprehensive, brief but accurate, outline of the types and causes of deafness. Much of the remainder of the report contains tables of findings from hearing surveys made.

Thirty thousand children were examined by the phonograph audiometer, and 1,080 found hard of hearing were given a test with a pitch range audiometer. In the elementary grades, 14 per cent were found to have a 9 decibel or greater loss in one or two ears. The proportion diminished in the junior high schools (10 per cent), Day High (5 per cent) and Vocational High (8 per cent). These figures are so grossly higher than what has been found elsewhere throughout the country over many years as to require an explanation, which is not given. The report significantly admits that "wide variations in the percentage of acoustically handicapped pupils were found among the several schools of the same type." This obviously suggests a high variability in the technic and accuracy of the test as given in the various schools.

The New York survey of 1935 is statistically reported; 643,318 children showed between 2.7 and 3.5 per cent handicapped by a 9 decibel loss. Yet, in this study, many of the supposedly deafened were not retested, a procedure which always eliminates some of the suspected and further reduces the percentage. (Generally speaking, the many surveys held for years report around 3 per cent affected.)

The committee believes that the discrepancy between the percentages for elementary schools and for secondary schools is due to the dropping out of handicapped children by reason of poor school performance. No data are reported to prove this supposition.

A number of pages of the report are devoted honestly and frankly to the independability of the data collected from the City Day School for the Deaf, Public School 47. "Histories are generally incomplete and inadequate as to previous ear history and dates. Otological examinations are incomplete in a great many cases. Diagnoses appear to have been made wholly on the basis of histories and hearing losses. No otoscopic data are mentioned. Nose and throat examinations were apparently superficial; in many cases none were shown to have been made. There is no evidence of any otological treatment having been given." This "survey" was one conducted between the years 1935 and 1938 as a WPA project under the direction of the board of education.

It is informative, yet disappointing, to read in the summary "There is now no medical or otological service for acoustically handicapped children either under the Board of Education or Department of Health, other than provided in Public School No. 47" (the city day school for the deaf). (Recall that the deaf are profoundly handicapped as compared with the hard of hearing.)

The committee's conclusions are distinctly constructive in suggestions for reform; "Provision must be made for the inauguration of otological, medical testing and educational programs for acoustically handicapped children." It is to be hoped that "otological, medical testing" may be expanded into real otologic care for those with incipient deafness, although no suggestion of this appears in the recommendation.

The reviewer takes the liberty to remind the reader that "the world is still deceived by ornament." It might appear that something is being done for the hard of hearing child when one considers the number of hearing surveys that have annually been undertaken throughout the country. This survey from New York City is not greatly different from surveys elsewhere, except in its frankness in admitting that most of the statistics are nearly worthless and that actually nothing of a preventive or therapeutic nature is being done for the deafened child when found. These admissions are the real contributions of this voluminous, costly study and report.

American Red Cross Textbook on Red Cross Home Nursing Prepared Under the Direction of Nursing Service, American Red Cross. By Lona L. Trott, R.N., B.S., Assistant Director, Health Education, Red Cross Nursing Service, Washington, D. C. Formerly American Red Cross Textbook Home Hygiene and Care of the Sick by Jane A. Delano, R.N. Paper. Price, 60 cents; Cloth. Price, $1.10. Pp. 431, with 103 illustrations. Philadelphia: Blakiston Company, 1942.

This is the fifth edition of a book first published by Jane A. Delano in 1913. It has been revised and brought up to date by several competent authorities and it has had the cooperation of great numbers of workers who have done their utmost to aid the Red Cross in making this a practical working book. Every home maker can keep herself and family in good health if she will learn the simple facts here made available. The book is divided into four units, the first two of which discuss the problems involved in making health and happiness in home life and in the community; the third unit is devoted to the problems of the mother and the child, and the fourth explains how one may cooperate intelligently with the physician when sickness invades the home. The amount of material here assembled is large and authentic. It is supplemented by a reading list and an index, as is each section of the book. There are also questions for review. If any criticisms are to be made they concern the inadequacy of the illustrations, the lack of inspiration in the type and in the display of the material and the general dreariness and solidity of the presentation. It is like a meal which is full of nutrition but somehow lacks those qualities that stimulate appetite. There are, however, occasional sections which utilize modern teaching methods to great advantage; for instance, the section on the care of the patient at home in the chapter on how to take care of a person who has a communicable disease is told as a story of a family in which an infectious disease appeared. This is interesting and instructive. Altogether the book can be especially recommended because the price is most reasonable, it is quite reliable and, if suitably studied, it must result in great advances in personal and public hygiene in our nation.

The Care of the Aged (Geriatrics). By Malford W. Thewlis, M.D., Attending Specialist, General Medicine, United States Public Health Hospitals, New York City. Fourth edition. Cloth. Price, $7. Pp. 589, with 50 illustrations. St. Louis: C. V. Mosby Company, 1942.

A new specialty devoted to the care of the aged is called geriatrics. Pediatrics and geriatrics are what might be called "horizontal" specialties in contrast to such "vertical" specialties as ophthalmology, dermatology or gynecology, which are devoted to disease of restricted anatomic structures or regions at any age. Certain diseases or degenerations have been comparatively neglected in the aged. If they could be brought into focus and properly studied only by the development of a group of specialists particularly interested in such problems there would be ample justification for a new specialty. At present there seems little evidence to indicate that the problems peculiar to the aged cannot be investigated satisfactorily by physicians adequately trained in general practice, internal medicine, neurology and other fields without resort to a new "specialty." The material in this book which is strictly applicable to the aged could be compressed into a fraction of the space now employed. This is not to minimize the importance of disease in the aged, whose peculiar problems have in many cases received scant attention from busy physicians. Nevertheless it is doubted that there is at present enough information on the subject to warrant a special textbook.

Everyday Nursing for the Everyday Home. By Elinor E. Norlin, R.N., Teacher of Hygiene and Home Nursing, Julia Richman High School, New York, and Bessie M. Donaldson, R.N., Teacher of Hygiene and Home Nursing, Bay Ridge High School, Brooklyn, N. Y. Cloth. Price, $2.50. Pp. 366, with illustrations by Mary Simas. New York: Macmillan Company, 1942.

This book, written by two teachers of hygiene and home nursing, is a useful and clearly written work. It emphasizes preventive health measures and is well oriented with respect to mental health. The health needs of the growing child are emphasized in the first half of the book. The latter half of the book is devoted to the actual nursing needs during illness. Throughout the book, in presenting methods and technics for care of the young or of the ill, that meticulous attention to detail characteristic of well trained nurses is evident. This book should be useful in the home and to doctors and nurses in informing and advising the layman.

Queries and Minor Notes

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

SEASONAL FREQUENCY OF DEATHS FROM APOPLEXY

To the Editor:—The question has come up as to what time of year apoplexy is most likely to occur. That is, is it more prevalent in the summer or winter months? Some one has the idea that apoplexy occurs in the month of August more than in any other month. I would appreciate any information you may furnish on this.

H. Quillian Jones, M.D., Fort Myers, Fla.

Answer.—Apoplexy deaths occur most frequently in midwinter cold and are at a minimum in August and September here in America. In Florida such deaths are 64 per cent more frequent in January and February than in August and in September, in Alabama 39 per cent, in Virginia 37 per cent and in New York 36 per cent. The accompanying table tells the story:

Deaths from Cerebral Hemorrhage and Softening

(Five year average, 1931-1935; thirty-one day equalized month basis)

	January	February	March	April	May	June	July	August	September	October	November	December
Florida	92	105	86	78	69	66	67	[illegible]	61	65	78	94
Alabama	100	98	98	79	80	86	72	[illegible]	76	79	86	95
Virginia	144	139	137	136	122	130	115	105	101	120	130	138
New York	826	822	796	784	741	[illegible]	624	[illegible]	616	694	720	804

PLACENTA PREVIA

To the Editor:—A woman aged 29 in her first pregnancy suffered rhythmic pains, with moderate bleeding and discharge of fragments of material found to be decidua and free of chorionic villi, just one week before completion of the seventh month. After all fragments were expelled, the pains subsided and pregnancy continued another six weeks. An anterior marginal placenta previa was found, but labor was without incident and at no time was there more than the normal amount of loss of blood. Two and a half years later, in her second pregnancy, the same condition recurred—again just one week before the completion of the seventh month. This time the pregnancy was carried only another ten days. At labor an anterior marginal placenta previa was again found, no incident occurred, and there was no excessive amount of bleeding. The baby lived only one day, because of prematurity. Relevant points in the history are the presence of a compensatory lordosis due to childhood poliomyelitis affecting the left hip and thigh and the possible presence of an intramural fibroid just above the internal os. Is this train of events typical of placenta previa? What investigations would be suggested in this case? Can the patient be assured that the condition will be unlikely to recur? What treatment would be indicated to prevent such an occurrence in the future?

M.D., Ontario.

Answer.—Repetition of placenta previa in the same patient is not an infrequent occurrence. In fact, some cases of habitual abortion are due to this condition. Unfortunately, at the present time there are not any means of preventing low implantation of the fertilized ovum. Most likely, the old poliomyelitis and present intramural fibroid have nothing to do with the development of the placenta previa. The occurrence of painless bleeding in the seventh month is characteristic of placenta previa. Since there is no known way of preventing this condition, the patient should be kept in bed most of the time after the sixth month. However, even complete rest in bed may not prevent the occurrence of bleeding, because the bleeding is due to partial separation of the placenta. This is the result of the physiologic thinning out of the lower uterine segment, during the process of which there is some "shearing off" of the placenta with resultant bleeding.

PAINTING LEGS

To the Editor:—Is painting the legs or applying a lotion in place of silk hose harmful?

Juanita S. McLaughlin, M.D., Mercersburg, Pa.

Answer.—Information available indicates that a great many liquid stocking preparations on the market should be entirely harmless when used as recommended. This statement could not be made of some of them, however, because some contain coal tar dyes.

A PROBABLE HIATUS HERNIA

To the Editor:—At the age of 25 a man who is now 36, 5 feet 10 inches (178 cm.) tall and weighing 195 pounds (88.5 Kg.), noticed precordial pain which had no relation to exertion. The pain was dull and would continue for several hours; rarely, sharp spasms of pain lasting for a second would occur. There was no feeling of constriction or very severe pain. The pain was absent or decreased during exertion. The site of the pain was in any one of three places—over the aortic area, at the apex or about 2 inches to the left of the apex, and occasionally the pain was referred to all fingers and the left arm. The fingers most commonly feeling numb were the thumb, the index finger and the middle finger. During the past year the pain has been more severe and more constant, although there was a period of three months two years ago during which the pain was absent. The patient at this time was very busy and overworked; otherwise there was little change in his mode of life. Smoking has a curious effect on the pain, giving rise to it quickly after two cigarets are smoked. If many cigarets are smoked afterward there is no pain, or occasionally it continues. The pain occasionally is decreased by glyceryl trinitrate and sometimes is not affected. The patient does not now smoke and says he feels better, but the pain continues. After he discontinued smoking the pain entirely ceased for about five days and then came back. The physical examination is negative. The chest is clear by x-ray examination except for "furry" outline of the pericardial sac. The heart is not enlarged. The pulse rate varies from 70 to 100 at rest. The heart sounds normal except for a "split" first sound at the apex and occasional extrasystoles. The blood count is normal. Eight Wassermann tests have been negative. There have been three electrocardiograms. The first two were normal in all four leads except for somatic tremor and extrasystoles; the last electrocardiogram showed a split T wave in the third lead. The first was taken ten years ago, the second four years ago and the third two months ago. All tracings were pronounced normal. The patient is in good general health except for an irritable colon, which gives a chronic diarrhea without blood. This can be controlled by a soft diet. He drinks coffee but discontinued it for three months with no effect on the pains. Reflexes are normal except for absent knee jerks, which have always been lacking. The patient has been seen by three cardiologists, all of whom said that he does not have heart disease; one called it a psychoneurosis. I should appreciate advice regarding the probable cause of pain, the necessary tests or procedures and the treatment and prognosis.

M.D., Arkansas.

Answer.—There are several possible causes for these symptoms, and each possibility is in turn rendered improbable by some point in the history.

The subjective symptoms will fit very well into a diagnosis of angina pectoris, but it is difficult to discover just what type of anginal pain would be much better by exertion or would last for hours. Any explanation would be more ingenious than scientific or clinically probable. Anginal pain is occasionally induced by cigaret smoking, but in this case occurrences of pain did not cease when smoking was discontinued.

A hiatus hernia could cause anginal symptoms, either by mechanical displacement of the thoracic viscera or by initiating a reflex vasoconstriction of the coronaries. A hiatus hernia is very rare at the age of 25 unless it is associated with a true congenital short esophagus and is in part a thoracic stenosis. In such a case the symptoms would not tend to disappear over a period of months.

The type of hiatus hernia seen associated with a spastic colon, and possibly due to a reflex shortening of the longitudinal fibers of the esophagus, rarely occurs before 40 but does occur in so-called neurotic individuals. The type of hiatus hernia due to increased intra-abdominal pressure also rarely occurs early in life and usually gives a fairly definite history of symptoms on stooping over or lying down after meals. A spastic colon over contracting on gas or fecal matter could cause anginal pain, probably because of a reflex coronary vasoconstriction. Such a spastic colon could readily be assumed to be better symptomatically during a period when the patient was busy and his attention diverted from himself. And it might be better on exertion. A therapeutic test with atropine or belladonna, alone or with a barbiturate, should help to decide. Mediastinal tumor of any nature should be ruled out roentgenologically but is improbable with the history of relief on exertion.

It is difficult to think of any neurologic basis for pain with this distribution and with so long a history with no apparent progress. A cord tumor would not be so diffuse in its manifestations and would not be at all likely to be as stationary. It might give a history of being worse on lying down but hardly of being better on exertion. A hemangioma might involve several vertebrae on either side or on both but is too remote a possibility and is ruled out by the history.

While such a patient may indeed be psychoneurotic, no case should be easily dismissed with such a diagnosis. It is better to say simply that one does not know, and not to say that until every possible source of the symptoms, however remote, has been carefully explored and reexplored over a long period.

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MASTURBATION AT HIGH SCHOOL AGE

To the Editor:—What can be done for masturbation in high school boys? What ill effects might ensue? For the school physician, this is a serious problem.

M.D., Maine.

ANSWER.—The subject of masturbation in boys of high school age is considered quite differently from a generation ago. At that time it was supposed to be the cause of serious injury to the body, the mind and the spirit.

Practically all authorities are now agreed that it is much less serious than was formerly supposed, and there are now many authorities who believe that it is not serious at all unless it so conflicts with the boy's training and ideals as to cause him to feel seriously degraded and to cause him to worry and possibly to develop some sort of anxiety psychosis.

Standard textbooks of genitourinary disease for the most part treat the practice as being a dangerous one, but today many are strongly of the opinion that those taking this view are simply repeating the conventional teaching of the past. Probably it is better simply to regard masturbation as an emotional release. Certainly it is safer for a boy to practice masturbation than for him to participate in illicit sexual relations.

If we suppose that the practice is seriously wrong, still the problem as to what can be done about it is unanswered. The claim that exercise, recreation or heavy employment will remove the desire to masturbate is utterly foolish, because the desire arises mainly when one is in bed, and at such a time one cannot of course be indulging in hard work. As a matter of fact, moderate degrees of fatigue in some persons seem to serve as mild sexual stimulants.

A healthy boy in a good home, loved and well cared for by his parents will rarely if ever injure himself by masturbation unless he has been taught that he has degraded his body, lost his soul and undermined his intellect.

The school physician should realize that whatever he does or tries to do, whatever his opinions may be, the practice will probably continue. Where such practice is in the scope of what may be considered normal he will probably do well to ignore the question. Where groups of boys are involved or in instances which seem to be abnormal, special consideration will be required.

PRESSURE POINTS TO CONTROL BLEEDING

To the Editor:—I have been interested in first aid work for a long time, especially in connection with Boy Scout work and civilian defense first aid training. The teaching and demonstrating of pressure points in controlling bleeding has raised the question in my mind as to its value. In many years of my practice, in my two years' service during the World War and in industrial work, I have never found any occasion to make use of these pressure points. I know of no time that any one practicing first aid has found it necessary or advisable to make use of them. Could you let me know if there has been any study or investigation as to the value of teaching this? Many of the pupils taking first aid find it difficult to find these pressure points.

William Ginsburg, M.D., St. Paul.

ANSWER.—Any study or investigation as to the value of teaching pressure points for the control of hemorrhage is not known. It is extremely doubtful that these pressure points are ever used by physicians doing a large amount of emergency surgery. Nonetheless it is entirely conceivable that under certain rare combinations of circumstances the trained first aid worker may save a life by his knowledge of the pressure points. This applies particularly to the pressure points of the arm and thigh. The pressure points over the subclavian, the facial and the temporal arteries are of much less value, and the pressure point over the carotid carries additional danger from the possibility of inciting the carotid sinus reflex.

As pointed out in the report of a committee of the House of Delegates of the American Medical Association at its June 1942 meeting, the work of the Red Cross and other agencies which have interested themselves in first aid is commended. Attention was called to the fact that first aid manuals are written by physicians, and the first aid teaching is initially done by physicians, and that cooperation lies in their willingness to render the service and the willingness of the agencies concerned to accept it.

ESTROGEN THERAPY FOR ARTHRITIS

To the Editor:—Estrogen therapy (diethylstilbestrol) has been reported as helpful in relieving various arthritic and rheumatic symptoms in women in or many years past the menopause. Would the estrogen be likely to help elderly men with the same complaints?

M.D., Alabama.

ANSWER.—It has not been proved conclusively that estrogenic therapy relieves arthritis in women. Therefore there is no reason to believe that it would help elderly men suffering from the same disease.

TREATMENT OF HYPOPARATHYROIDISM

To the Editor:—I recently had occasion to review the literature relating to the use of dihydrotachysterol in hypoparathyroidism and thought that I had learned from this literature, as well as from personal experience with a patient, that a distinct advance had been made in the treatment of hypoparathyroidism and that dihydrotachysterol was a specific and unique remedy. However, I now encounter the article by Franklin C. McLean (The Journal, Aug. 23, 1941, p. 689) in which it is stated that everything that can be accomplished with dihydrotachysterol can be accomplished just as well and just as safely with vitamin D, provided vitamin D is given in sufficient dosage. Roughly, 400,000 units of vitamin D correspond to 1 cc. of the 0.5 per cent oily solution of dihydrotachysterol. I wonder if sufficient time has elapsed since the publication of McLean's article for the accumulation of further clinical data on this subject, and which one of these two preparations in the light of present knowledge is preferable in the treatment of hypoparathyroidism.

M.D., Georgia.

ANSWER.—Sevringhaus (Proceedings of the Central Society for Clinical Research, THE JOURNAL, April 11, 1942, p. 1322) states that his observations on 3 patients with post-thyroidectomy tetany and 1 with idiopathic hypoparathyroidism confirm the point of view advanced by McLean. The article by McLean referred to in the inquiry also gives a number of references to papers reporting favorable results with vitamin D. In the present state of knowledge it cannot be said that either dihydrotachysterol or vitamin D is superior to the other in the treatment of hypoparathyroidism.

INDICANURIA—DIET AND HYPERTENSION

To the Editor:—What is the clinical significance of indican in the urine? Is there any evidence to show that it is related to hypertension or to any other serious clinical condition? What benefit, if any, is there in garlic therapy for the treatment of this condition? What dietary regimen is recommended for the correction of this condition?

Herbert K. Abrams, M.D., Texarkana, Ark.

ANSWER.—Indican is normally present in urine in small amounts. It is increased by a high protein diet, as indoxyl is derived largely from intestinal putrefaction. Thus transient indicanuria may mean no more than indicating a recent meal containing an excess of meat. It is rarely increased by constipation, but stasis of the bowel, such as may occur in typhoid, peritonitis or intestinal obstruction, raises the indican excretion greatly. There is no reliable evidence indicating that indicanuria is in any way associated with hypertensive arterial disease.

There is no valid evidence that garlic or garlic preparations have the slightest therapeutic value in hypertensive disease.

Dietary management of hypertensive patients is not a major factor in the control of the disorder. A well balanced ration, with adequate protein (at least 1 Gm. per kilogram of body weight daily), liberal vitamins and minerals and designed to reduce weight in the obese is all that is necessary. Anemia, which is often secondary to iron deficient diets, greatly enhances the ill consequences of the vascular disorder. Particularly important is a free intake of fluids. Unless there are specific contraindications, at least 3 liters of fluids should be consumed daily; the urinary volume for twenty-four hours is best kept at or above 1,500 cc. Coffee and tea are permissible, especially in the morning, but should be deleted in the evening as caffeine may interfere with normal nocturnal rest and sleep. Condiments and spices should be omitted from the diet. Salt is permissible in normal quantity, but excessive oversalting is as unwise as unnecessary. Alcohol, in moderation, is desirable, especially for older patients and/or those who exhibit evidences of arteriosclerosis. The essential element in the dietary regimen of hypertension is moderation in all things. The management of this complex disorder involves many approaches other than through nutrition.

BILATERAL ADRENAL DENERVATION

To the Editor:—Please advise as to the present status of Crile's bilateral adrenal denervation for neurocirculatory asthenia in which he has reported 94 per cent cures; also confirmatory evidence for the value of this operation in hyperthyroidism and peptic ulcer, Crile reporting 93.7 and 96.4 per cent cures respectively.

M.D., New York.

ANSWER.—Dr. Crile's bilateral adrenal denervation has not been established as of demonstrated value for any disease. Neurocirculatory asthenia is probably a functional disease, ill defined and probably covering a number of conditions. Like other forms of neuroses, it can generally be treated successfully by a well trained neurologist or psychiatrist. There is no confirming evidence for Dr. Crile's claims for a high percentage of cures in both hyperthyroidism and peptic ulcers by bilateral adrenal denervation.

"KNUCKLE PADS" AND DUPUYTREN'S CONTRACTURE

To the Editor:—A man aged 25 has firm nodules on the dorsal aspects of the proximal phalangeal joints of the right fourth finger, the left fifth finger and the left third finger, which appeared spontaneously in that order during childhood, during adolescence and during the past year. There is no restriction of motion in the involved joints, but the nodules are tender to pressure and to extreme flexion of the joints involved. Roentgenograms of the joints show no bone deformity and no areas of calcification in the soft tissues. In addition to these lesions there is a firm nodule on the sole of the left foot, which was first noticed three years ago and which appears to be associated with the flexor tendon of the big toe. A similar nodule, which appeared six years ago in the palm of the left hand at the base of the fourth finger, was diagnosed as an early Dupuytren's contracture, and the palmar fascia was successfully excised two months ago. Microscopic examination of the specimen confirmed the clinical diagnosis. There has been no recurrence to date, and there is no functional impairment of the hand. It is interesting that the patient's maternal grandfather had "drawn-in" fingers and that the patient was rowing on his college crew when his Dupuytren's contracture developed, for the condition is commonly attributed either to a familial tendency or to occupational trauma. 1. Are nodules on the phalangeal joints, such as I have described, known to be associated with Dupuytren's contracture? 2. Would roentgen therapy be advisable? 3. Is surgical excision the method of choice? 4. What is the prognosis?

M.D., Maine.

ANSWER.—1. Yes.

2. No.

3. Yes.

4. Good.

A. E. Garrod, an English physician, first called attention to the "knuckle pads" and their common association with Dupuytren's contraction. They often develop before any thickening of the palmar fascia takes place and occur in 10 to 15 per cent of cases of Dupuytren's contraction.

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INTRACERVICAL SOFT RUBBER PESSARY

To the Editor:—There seems to be coming into more popular use a soft rubber contraceptive pessary which is inserted into the cervix. This pessary has three or four pliable, soft rubber inverted cones attached to the stem that is inserted into the cervix. We are told that this contraceptive measure is effective and harmless and that the pessary can be retained for several weeks, having no interference with menstruation. Please inform me as to the correctness of this information. Is the pessary harmless to the cervix? Is it effective? How long may it be left in place?

Henry W. Ten Pas, M.D., Holland, Mich.

ANSWER.—No material or device is yet known that can long and safely be retained within the cervix or uterus. Soft rubber cannot be cleansed in that position, and pliability does not abolish its being a foreign body. Such devices probably reduce fertility, but their chief actions are as early abortifacients.

SULFATHIAZOLE AND WHOOPING COUGH

To the Editor:—What is the influence of sulfathiazole in whooping cough? A girl aged 10 months developed bronchial pneumonia in the third week of pertussis. She was given emulsion of sulfathiazole (5 grains to a drachm), a teaspoonful every four hours (during the day only) until pneumonia was under control. While the paroxysms of coughing were extremely severe prior to the administration of sulfathiazole, they were greatly reduced on exhibition of this drug and the course of whooping cough seems greatly modified.

E. Ray Royer, M.D., North Salem, Ind.

ANSWER.—Sulfathiazole is used routinely in some contagious disease hospitals for the treatment of whooping cough patients suffering from complications. Under such circumstances there seems to be no question with regard to its value. It is doubtful whether sulfathiazole can be depended on to exert a favorable influence on the paroxysms of uncomplicated whooping cough. This matter is now under investigation.

COMBINED FLUORESCENT AND MAZDA LIGHTING

To the Editor:—We are having some difficulty in arranging the lighting facilities in an old school building. There has been considerable discussion regarding the use of fluorescent lights together with the ordinary bulbs in the same room. Do you know whether any actual research has been done to find out whether this combination of lights is detrimental or undesirable?

H. B. Zommer, M.D., Lapeer, Mich.

ANSWER.—There is no harm in combining fluorescent lights with ordinary Mazda lights in the same room. The fluorescent lights are far more economical in consumption of electricity but more expensive for installation. It would be better to use the ordinary fluorescent, not the daylight, as that blends better with the Mazda and has the further advantage of being more economical and more agreeable to the eyes. A further advantage of the fluorescent lights is that they are less intense. The light is spread over a larger surface and therefore is better for the eyes than the concentrated incandescent lights.

Painting the ceiling and upper part of the walls a light color is a great help.

MORPHINE AND LABOR

To the Editor:—What is the present status of the use of morphine in the conduct of labor in the primipara? How much and how often can the drug be repeated with safety to both mother and child?

M.D., New York

ANSWER.—Morphine is believed by many to be of distinct value as an analgesic during the first stage of labor and is considered safe for mother and baby when properly used. The most usable average dose is 1/6 grain (0.01 Gm.). The drug should never be used until labor is rhythmic and well established. It should not be used near the end of the first nor ever in the second stage, because of possible harmful effects on the baby. In probably the great majority of labors the drug should be given but once in the course of a single labor. In certain long first stage labors with posterior positions of the occiput and breech presentations in primiparous women a second dose of the drug may be indicated. Notwithstanding present day methods of pain relief during labor, morphine may be considered a valuable and safe drug if conservatively used.

INHALATION OF COFFEE DUST

To the Editor:—Would you be so kind as to discuss the possible harmful effects of the continued inhalation of powdered coffee that one might encounter in its manufacture?

Daniel G. Melvin, M.D., Graystone Park, N. J.

ANSWER.—Experience on dusts of organic material in general indicates that these substances do not produce fibrosis. If any changes occur they are most commonly manifested as bronchitis or perhaps protein sensitization in susceptible individuals. Reports on the effects of coffee dust are lacking. Before assuming that exposure to this dust was exercising any influence on operatives, it would be well to make determinations on the number and size of the particles suspended in the air at the breathing level.

COLOSTOMY

To the Editor:—What is the longest interval known to have elapsed between resection of adenocarcinoma of the hepatic flexure (first stage Mikulicz) and surgical restoration of the intestinal canal by closure of the colostomy? Is there any danger of the colon (transverse, descending, sigmoid and rectum) becoming atrophied because of its being excluded for a period of five or six years?

M.D., New York.

ANSWER.—Information on the longest interval between the first stage Mikulicz resection of the hepatic flexure and surgical restoration of the intestinal canal by closure of a colostomy is not readily available. There is probably no danger of the colon becoming atrophied to the point where closure cannot be made even after a period of five or six years.

UNUSUAL REACTION TO SHORT WAVE EXPOSURE

To the Editor:—Regarding the query entitled "Unusual Reaction to Short Wave Exposure" (The Journal, Aug. 1, 1942, p. 1154), while I was treating a woman aged 27 for arthritic pains she occasionally became very anxious. She also complained of nausea and was afraid she would faint. As soon as the exposure was over (a 10 meter wavelength machine was used) she would feel better.

A. R. Aurelio, M.D., Brooklyn.

To the Editor:—In the answer to a query about an unusual reaction to short wave exposure (The Journal, Aug. 1, 1942, p. 1154), it is stated that similar reactions have not been reported to far. Nevertheless it seems that they are not unusual at all. My attention was attracted to this subject by several radio operators serving on ocean liners. They complained that the transmission of messages by ultra short waves was followed by a feeling of drunkenness, disorientation and exceptional nervousness, while the same transmission under the same conditions but by medium waves did not produce any disturbance. One of them once had to walk on the ship deck for about two hours after his night service ended at midnight, but this occurred only after transmitting by short waves. After ten to fifteen minutes of intense short (4 meters) wave diathermy of the neck or shoulders, I occasionally observed vertigo and a feeling of drunkenness of short duration. One patient almost fell from his chair when the current was turned off. Years ago I read that carrier pigeons, if released in the vicinity of a short wave transmitter, circle around and start in the right direction only when the transmission is over. It seems that these manifestations have something in common which would be worth while investigating.

Paolo Ravenna, M.D., Chicago.